User Instruction & Installation Manual

FX560 Remote Control
3 Kilowatt Xenon Searchlight

Product Reference Number:

A6065 – FX560RC 3Kw 400v 3 phase
PO Number 90.274.0028

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Manual Part Number: C24608
Issue : 4
VDB001

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1 - Introduction

It is imperative that this manual is read carefully and understood before installing your equipment. For your future reference please keep this manual in a safe place.

Thank you for specifying a product from the Francis Searchlights range. All Francis products are designed to give complete customer satisfaction and are manufactured to the highest engineering standards in order to ensure optimum performance and service life.

The Francis Xenon range combine features proven over many years service in the most hazardous conditions in both marine and land installations.

In order to prolong the life and performance of your product, we recommend that you only specify Francis Searchlights spare parts. This will also ensure that any warranties on your equipment will not be invalidated. Information on spares ordering and parts is provided in this manual.

Should you ever need to contact Francis Searchlights Ltd. regarding your equipment, please quote the Product Serial Number at all times.

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2 - Safety Precautions

The following instructions must be adhered to, in order to ensure a safe working environment and the safety of the user.

Note: When unpacking or manoeuvring the searchlight into its fixing position, suitable lifting points must be used in order to prevent damage to the equipment or personal injury.

- Because of the high internal pressure within the lamp, there is a risk of explosion in either a hot or cold state;
- During operation this lamp emits intense UV radiation which is harmful to the eyes and skin. Suitable protection should be worn;
- The high luminance of the arc can cause severe damage to the eye if viewed directly. ALWAYS wear suitable protective goggles when viewing the lamp;
- Always use protective jackets supplied with the lamp;
- Should it be necessary to examine the lamp with the front bezel removed, always use a protective shield and wear goggles to ensure a safe working environment;
- Searchlights get hot. Never touch the unit when lit and always allow 15 to 20 minutes for cooling down after turning the searchlight off;
- Never place anything on or cover the searchlight when in use;
- Ensure the lamp has cooled sufficiently before removal;
- If undue force appears necessary to remove the lamp, the equipment should be inspected by a competent person or contact the manufacturer;
- When disposing of lamps there are several options available:
    - Return the lamp, via the supplier, to the lamp manufacturer in its complete packaging
    - Because of the cold internal pressure of the lamp is approximately 8 bar, the lamp must first be depressurized before disposal. Place the lamp, in its protective jacket, in a plastic bag and drop from a height of 1 to 2 metres onto a hard surface;
- XBO lamps do not contain materials which are harmful to the environment and thus are not subject to special waste disposal regulations;
- Due to the vast range of lamps available it may appear possible that more powerful lamps can be used in the equipment than for which it was designed. Even when the unit will physically accept a higher wattage lamp, this substitution is not recommended and is dangerous. This action will also void any warranties on the equipment.
- Always refer to the lamp manufacturers technical data when dealing with lamps.

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3 - Technical Information

This product has been designed to operate in accordance with the product specification. The FX560RC 3000 watt searchlight has the following features:

- All marine grade materials and fixings;
- Electronic power supply unit;
- Parabolic glass reflector;
- Stove enamel painted;
- 385° horizontal rotation;
- Vertical movement 90° to -20°;
- Motor speed 0-20°/sec fast, 0-10°/sec slow (Pan)
  0-10°/sec fast, 0-5°/sec slow (Tilt);
- Remote focus facility;
- Internal self-regulating heater.

The searchlight also performs to the following optical data:

- Xenon light source;
- Lamp Wattage - 3000 Watts;
- Supply voltage – 400v & 240v;
- Peak Beam Candlepower – 175 Million lux;
- Range – 13,250 metres;
- Divergence - 1.5°;
- Temperature range: -50°C to +50°C

In order that the searchlight operates correctly it is imperative that competent personnel are responsible for the installation, operation and servicing of this equipment. Failure to adhere to this advice may cause premature failure or incorrect operation of the searchlight, which may damage the equipment or cause personal injury.

Technical information on the Power Supply Unit and Irem Ignitor are included overleaf. For more detailed information please contact the manufacturer.

PSU ref: Model N3-100E (Irem)
Ignitor ref: AS16040A (Irem)

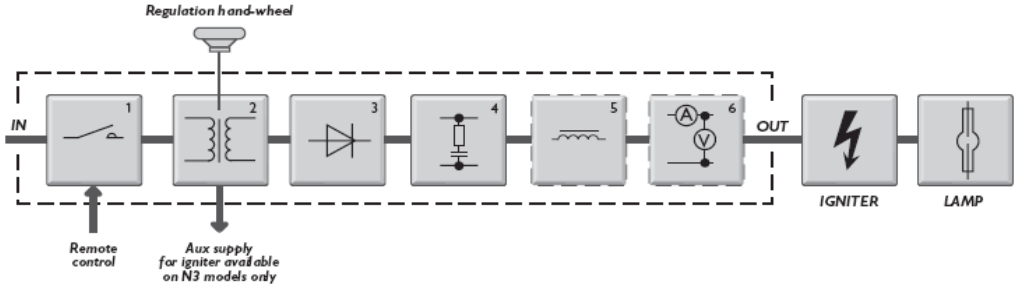
N3/N3-E SERIES

Rectifier power supplies for short arc xenon lamps

N3/N3-E Series

Rectifier power supplies for short arc Xenon lamps

A complete range of high quality rectifier power supplies specially designed to ensure correct operation and long life to short arc Xenon lamps from 700 to 15000W.
The whole range of these three-phase rectifiers is characterized by galvanic insulation, a soft inrush current, a low residual ripple value and a stable output current. These rectifiers are equipped with IREM special transformers and an exclusive magnetic shunt allowing a constant and linear regulation of the lamp output power.
Their new and peculiar design guarantees a low acoustical noise.
They are designed for continuous duty at ambient temperature up to 40°C.
They are equipped with on-off control switch and three terminals for the on-off remote control.



1. REMOTE CONTROL SWITCH
2. TRANSFORMER WITH ADJUSTABLE MAGNETIC SHUNT
3. SILICON DIODES
4. FILTER AND INRUSH CURRENT LIMITER
5. AUXILIARY FILTER (OPTIONAL ON N3-50E/N3-50, N3-80E/N3-80, N3-100E/N3-100)
6. VOLTMETER AND AMMETER (ON N3 MODELS ON DEMAND)

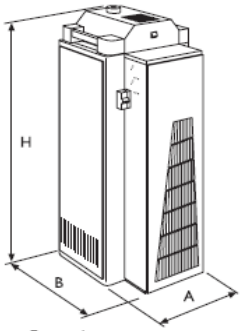


Figure 1.

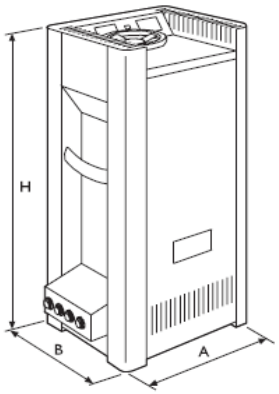


Figure 2.

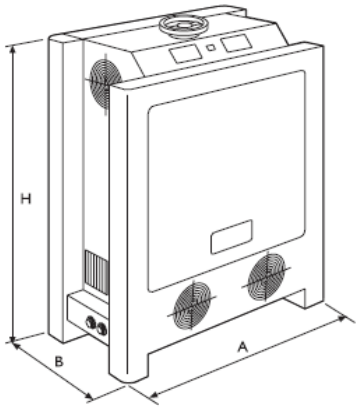


Figure 3.

BD001

N3/N3-E Series

Rectifier power supplies for short arc xenon lamps

Xenon lamp power range [W]		2000-3000						3000-5000					
MODEL		N3-100E					N3-100	N3-150E					N3-150
Item number		00610080	00610081	00610084	00610088	model on demand	00610008	00615280	00615251	00615255	00615288	model on demand	00615208
INPUT DATA													
Mains connection		3Ph+PE						3Ph+PE					
AC nominal voltage	[V]	400	220	415	220	200	220	400	220	415	220	200	220
Input voltage range	[V]	380-440	208-242	394-456	208-230	190-220	208-230	380-440	208-242	394-456	208-230	190-220	208-230
Frequency	[Hz]	50	50	50/60	60	50/60	60	50	50	50/60	60	50/60	60
Frequency range	[Hz]	48-52	48-52	48-63	57-63	48-63	57-63	48-52	48-52	48-63	57-63	48-63	57-63
Max. input current	[A]	10	18.1	9.6	18.1	19.9	18.1	13.6	24.7	13.1	24.7	27.1	24.7
Max. power	[VA]	6900						9400					
Protection device		-						-					
OUTPUT DATA													
No-load voltage at min. input voltage[1]	[V]	112	106	111	109	104	109	112	108	108	110	107	110
DC output voltage range	[V]	28-36					28-36	28-40					28-40
DC output current range	[A]	52-110					52-110	80-150					80-150
Peak to peak current ripple with AF	[%]	<3					<3	<3					<3
Peak to peak current ripple without AF	[%]	<8					<8	-					-
Efficiency		≥ 0.8					≥ 0.8	≥ 0.8					≥ 0.8
Output instruments[2]		-					A/V	-					A/V
Aux. Supply		-					provided	-					provided
Aux. Supply protetcion		-					fuse	-					fuse
ON/OFF control		switch					switch	switch					switch
Lamp current adjustment		hand wheel					hand wheel	hand wheel					hand wheel
Remote control		ON/OFF					ON/OFF	ON/OFF					ON/OFF
Conformity		CE	CE	CE	CE/UL[5]	CE	CE/UL[6]	CE	CE	CE	CE/UL[5]	CE	CE/UL[6]
Acoustical noise[3]	[db]	< 55					< 55	< 55					< 55
Degree of protection		IP20					IP20	IP20					IP20
Isolation class		CL1					CL1	CL1					CL1
Storage temperature	[°C]	-20 to +60					-20 to +60	-20 to +60					-20 to +60
Operating temperature	[°C]	0 to +40					0 to +40	0 to +40					0 to +40
Cooling		free convection					free convection	forced					forced
Dimensions AxBxH	[mm]	320x380x770					460x410x940	320x380x770					460x410x940
Figure		1					2	1					2
Weight with AF[4]	[kg]	123					148	130					154
Weight without AF[4]	[kg]	108					127	-					-
Mounting position		vertical						vertical					
Suggested igniter		ASN-700A AS-16040A						ASN-700A AS-16040A					

1) 500ms after switching on.
2) A = ammeter / V = voltmeter (available on demand on N3 models only).
3) Measurement made in open space at 1 m distance.
4) Net weight to be considered with a tolerance of ± 2.5%.
5) UL compliance.
6) UL certified.

Different input voltages or frequencies are available on request

IREM holds the right to modify the present datasheet without any prior notice

IREM

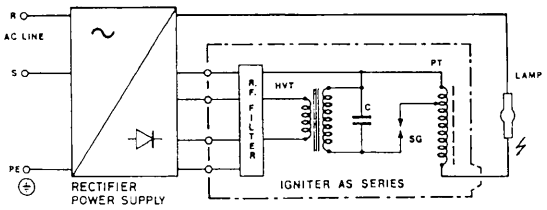
BD002

AS series

Introduction

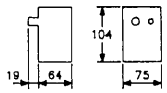
These igniters are expressly designed to strike Xenon, Xenon-Mercury, Mercury, Metal Halide and similar arc lamps. They produce the high voltage, high frequency starting potential required to get the gas in the lamp to ionize and make the current flow possible.
The ***AS*** igniters meet the lamp manufacturers' recommendations to ensure immediate and correct ignition of the lamp when cold or in any cooling stage.
They should be installed close to the lamp (but thermally shielded from it); the high voltage lead must be as short as possible and carefully insulated to prevent corona loss and reduction of strike energy.
The ambient temperature must not exceed 60°C.
Some models are equipped with a built-in special function relay allowing automatically cycled or timed ignition. Also this relay prevents the igniter from striking when the lamp is ON or if the no-load voltage to the lamp is not correct. As far as the insulation class, this device can be considered Cl. II (as per IEC 536), but it must be grounded for interference suppression.

Block diagram

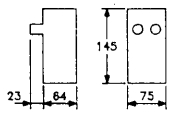


Outline drawing

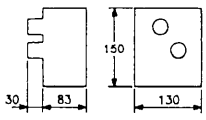
AS-3040



AS-8030



AS-16040/A



AS Series range

Models	AC input (50-60Hz) Volt	AC input (50-60Hz) A during ignition	H.V. output KV	Lamp current A	Weight Kg.
AS-3040	230V	0.8	40	30	1.3
AS-8030	±10%	1.5	30	80	1.5
AS-16040A		3.8	40	160	3.5

The suffix 'A', used for the model AS-16040A, means that it has a built-in relay system for automatic or short timed ignition.

BD003

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4 - Unpacking and Installation Instructions

The following instructions should be read and fully understood prior to installing the equipment to ensure that the correct procedures are followed and all safety precautions are observed.

Note: If the equipment has been in storage for a considerable amount of time, it is advisable to conduct a routine maintenance check on all parts before installation.

Safety Precautions

This equipment should not be connected to an electrical supply before being installed. Installation procedures should be adhered to in order to ensure a safe working environment and reduce the risk of damage or personal injury.

Preparing the Mounting Position

Mark out and drill the fixing holes through the deck and bolt the searchlight base securely On an uneven surface it is necessary to use a suitable sealant, such as silicone in order to ensure a weatherproofed joint. If anti-vibration mounts are to be fitted, the fixing holes for the mounts should also be marked out and drilled. Prior to manoeuvring the searchlight into its' fixing position, the AV mounts should be fitted to the base. When in the desired position, bolt the searchlight firmly down.

5 - Electrical Installation

For safety purposes, only competent personnel should perform the electrical installation. All equipment should be installed to current Electrical Regulations and Standards.

In order to obtain the maximum light output from the searchlight, it is essential that the full operating voltage of the lamp fitted be applied to the lampholder contacts.

Method of Electrical Connection

1) Disconnect the supply before working on the electrical system;
2) The searchlight must be connected to a fused electrical supply, using suitably sized cable;
3) If the searchlight is located a considerable distance from the mains supply, provision must be made in the cable size in order to overcome the voltage drop.
   The PSU should NOT be positioned no more then 14 meters away from the Searchlight.
   The following table below indicates the maximum length of cable to be used for the AC supply cable, from the control panel to the searchlight:

Searchlight	240v 3Kw
Cable Size (mm^2)	Distance Max
1.5	23 MTRS
2.5	39 MTRS
4	64 MTRS
6	99 MTRS
10	168 MTRS

4) Whenever possible cable terminations should be made below deck and with approved terminal devices;
5) If a spare auxiliary fuse or circuit breaker is not available, one of the correct type and rating should be fitted and connected to a positive supply. It is advisable to locate a bus bar or main connection and avoid any direct connection to the supply:

Note: This equipment must be earthed.

EC002

Installation Guidelines

A typical installation and connection routine for the searchlight with a Variable Speed Gearbox is as follows:

Referring to wiring diagram C24609, a 240v supply is fed to the Joystick Control Panel, which then provides a common feed to the Motor Gearbox and the Searchlight.

A separate 400v 3 phase & earth supply is fed to the power supply unit.

Cables required to be connected by the customer: -
4 core 16mm cable from the Motor Gearbox to the PSU, doubling up the pairs (15 Metres supplied)
3 core 1.5mm cable from the Motor Gearbox to the Joystick Control Panel (10.5 Metres supplied).
4 core 1.5mm cable from the Motor Gearbox to the Joystick Control Panel (11 Metres supplied).
12 core 1.5mm cable from the Motor Gearbox to the Joystick Control Panel (11 Metres supplied).
3 core 1.5mm cable from the Joystick Control Panel to the PSU (4.5 Metres supplied)

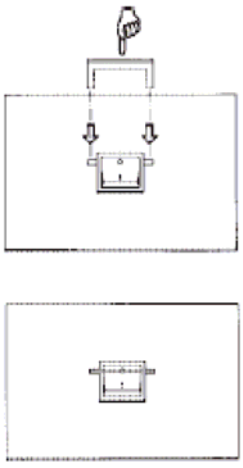
The Mains cable to the Joystick Control Panel and the Mains cable to the PSU both to be supplied by the customer.

The searchlight head is pre-wired along with the connecting cable to the motor gearbox.

Basic Operation

When the searchlight is switched on a DC voltage from the power supply unit is feed to the lamp. The ignitor ionises the gas within the lamp and this strikes the light.

All other facilities are fed via the joystick control panel and motor gearbox.



IMPORTANT:~ Remote operation
Before switching on the power supply unit via the on/off switch on the joystick Control Panel be sure the On/Off switch on the PSU is blocked by the mechanical lock to avoid untimely switching on, occurring for any reason.

Before the searchlight is switched on make sure the fans are turned on to avoid any overheating problems.

EC003

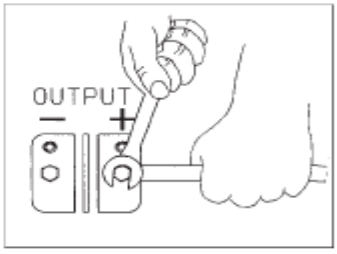
Connection and operating information

Installation - use

Connect the input and the output lines to the X1 terminal board (input terminals: U, V, W (13) and output terminals + and - (11)) by means of wires having a proper cross section (max. current density 4A per sq/mm). Connect the ground wire to the PE terminal (12).

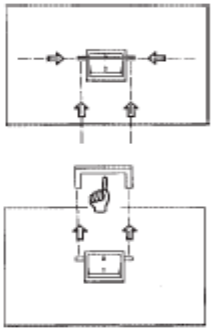
Output connection (+ / -)

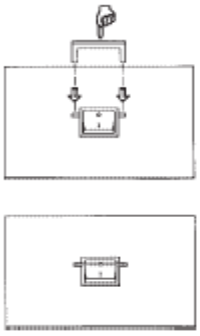
. Fit the output cables with M8 wire terminations
. Insert the output cable into their cable glands
. Lock the wire terminations, clamped to the output cables, to the connection plates paying attention to the correct polarity.



Manual operation

The ON/OFF switch has been factory-blocked to the OFF position by means of a mechanical lock to avoid untimely switching on, occuring for any reason, during the remote operation. Under manual operation, this lock has to be removed by means of pliers (press the two sides at the same time and then pull out - see on picture).





Remote operation

Before performing the remote connection, be sure the ON/OFF switch is blocked by the mechanical lock to avoid untimely switching on, occurring for any reason.
See the picture for the insertion of this lock, if removed.
Connect the wires of the ON/OFF push button to the terminals marked B, H, A (14) (see the relevant wiring diagrams).

Remark: the mechanical lock is not a safety device. It is required to equip the appliances connected to the rectifier with protective devices to avoid damages to persons and/or things.
N3-E rectifiers are fitted with a spare mechanical lock to be found into the envelope containing the operation manual.

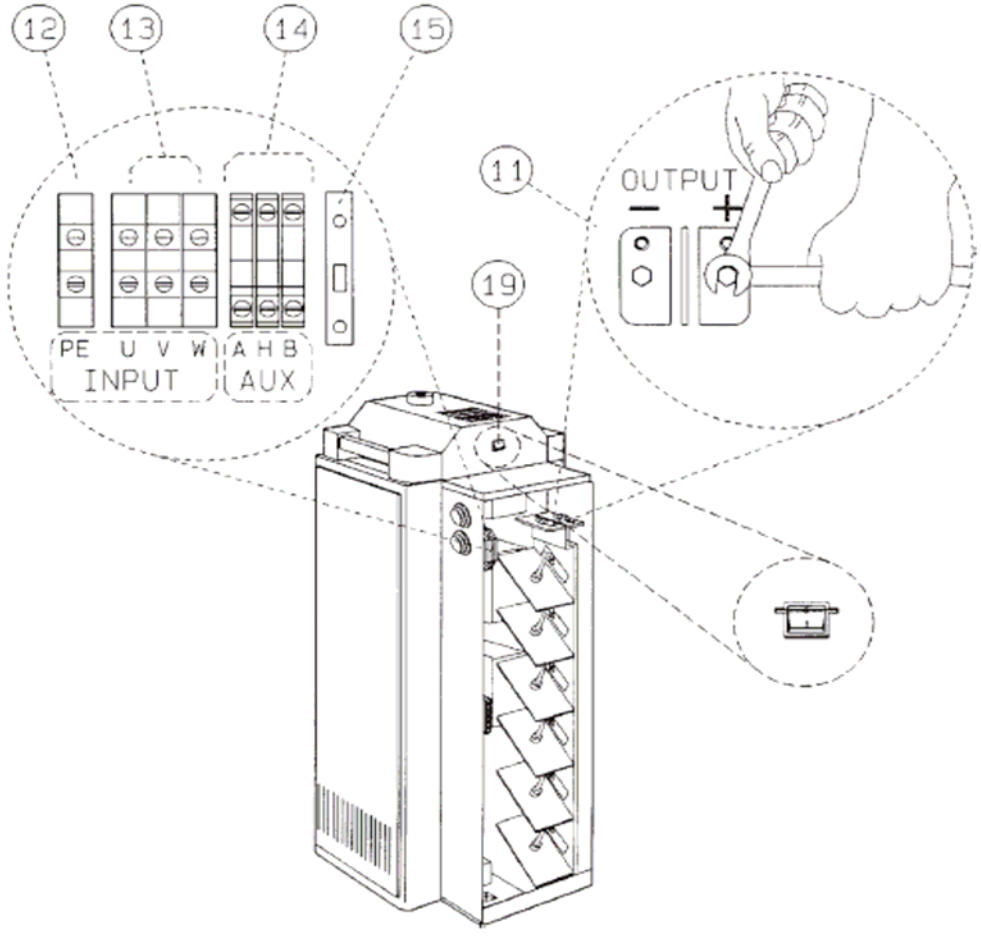
EC004

Connection and operating information

Installation - use

After having performed the connections, switch on the unit through the ON/OFF switch (19) (manual operation) or through the remote push button (14).
When the lamp is on, adjust the current by means of the adjustment hand-wheel (1).

N3-50E, N3-80E and N3-100E without AF

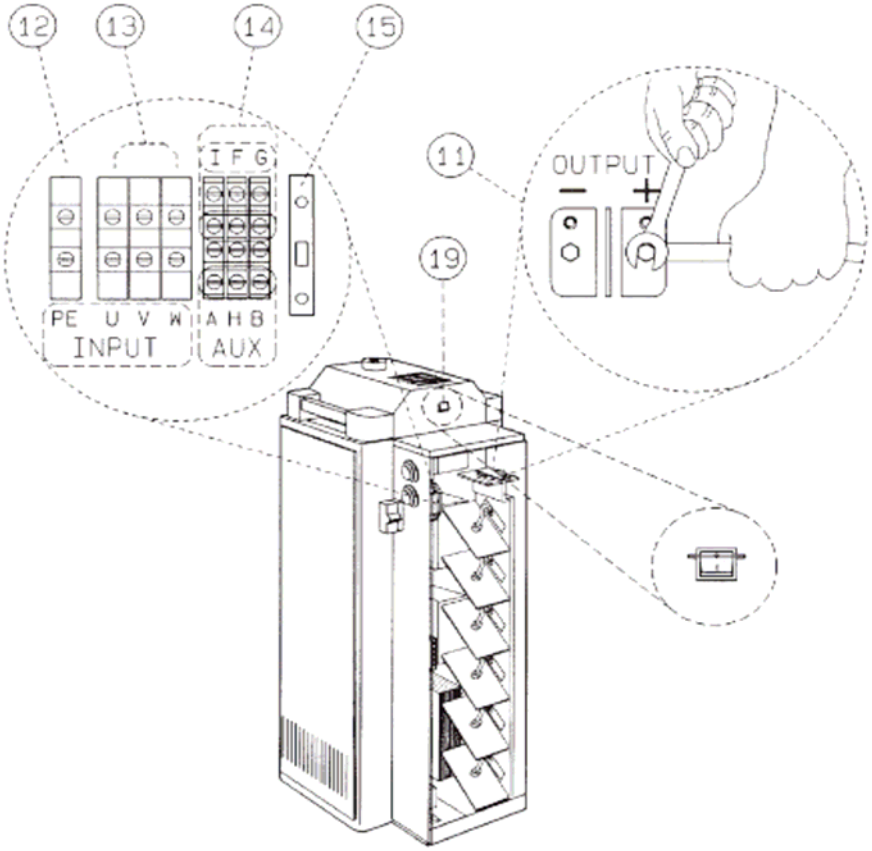


EC005

Connection and operating information

Installation - use

N3-50E*, N3-80E*, N3-100E*, N3-150E and N3-180E equipped with AF



Check that the circuit breaker (4) protecting the ignition relay board is set to ON.
If the circuit breaker is set to OFF, move to ON.

The circuit breaker tripping is remotely signalled through two contacts (5) connected to the alarm ON terminals (14).

When the unit operates properly and the circuit breaker (4) is set to ON the status of the contacts is:
contact on terminals F-G: open
contact on terminals I-L: closed

If the circuit breaker trips, the status of the contacts is:
contact on terminals F-G: closed
contact on terminals I-L: open

* AF on demand.

Fitting instructions for the 3Kw xenon lamp

Referring to the diagram overleaf:

1) Unfasten the ten latches (A) on the front and rear of the searchlight;

2) Remove the front bezel (B) and rear bezel (C) assemblies;

3) Unscrew the two M6 hexagon screws (D) from the front lampholder mounting block (E) and remove the front lampholder assembly from the mounting bracket;

4) Loosen the knurled screw on the front (F)and rear (G) lampholder assembles;

5) The lamp can now be inserted, make sure that the negative (cathode) end of the lamp is towards the rear of the searchlight;

6) Tighten the knurled screw (G) on the rear lampholder assembly to hold the lamp in position;

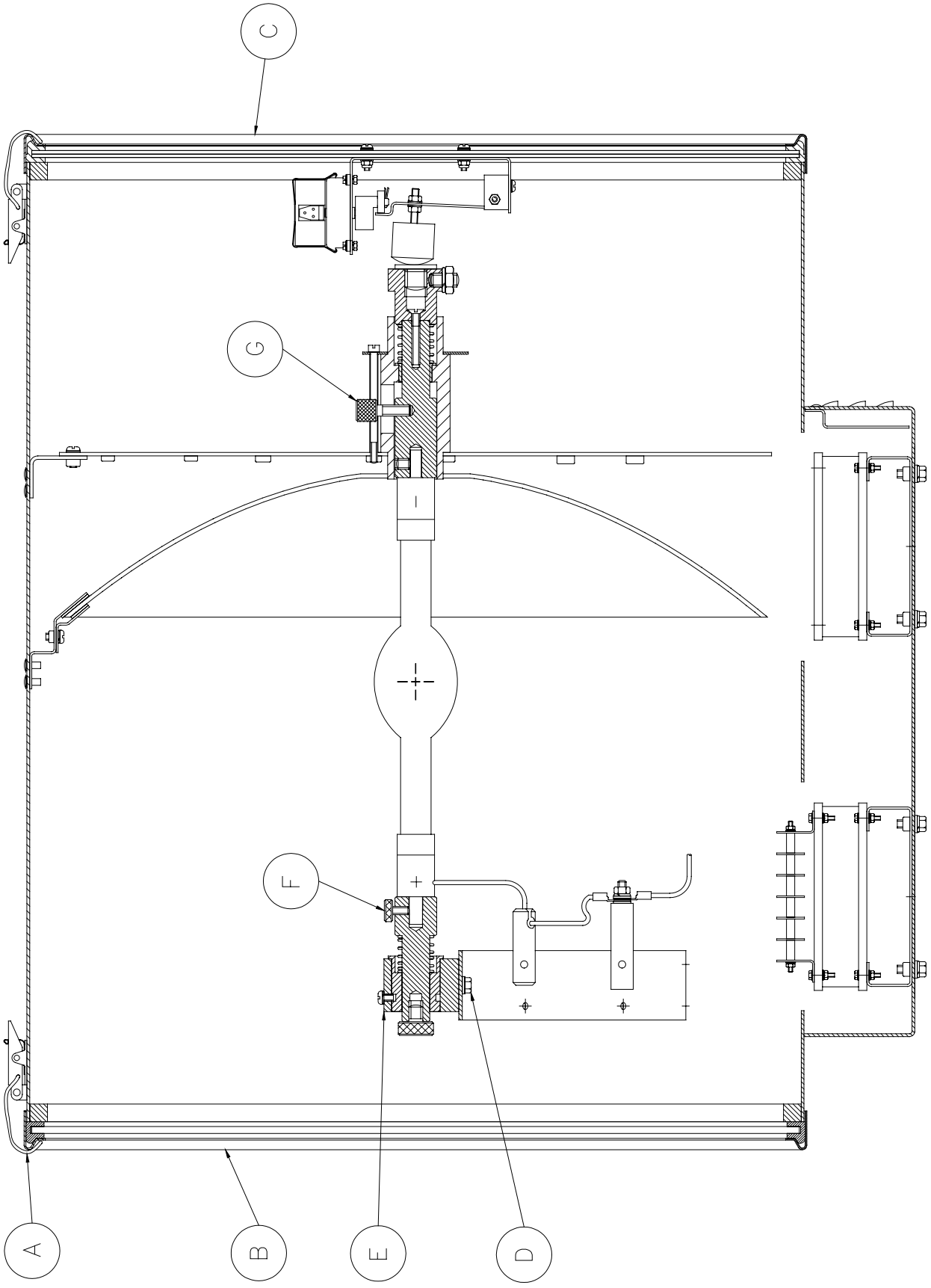
7) Fasten the front lampholder mounting block back in position, it will be necessary to pull the front socket against its spring to fit over the lamp. When in place tighten the front knurled screw (F);

8) Fasten the front and rear lampholder leads as wiring diagram, ensuring the connections are secure;

9) The front bezel and rear bezel can now be replaced.

10) Removal is the reverse of the above.

EC007



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EC008

6 - Operating Instructions

This equipment is designed for use out of doors, in free air. Never place anything on, or cover, the searchlight when in use as this may present a hazard.

All PSU should be housed below deck/in doors. Never leave the PSU exposed to weather conditions.

The searchlight can be remotely positioned via the joystick control panel, with the facility for movement up, down, left and right. The speed of movement depends on the more pressure applied to the joystick the faster the searchlight moves. When in the desired position the joystick should be released so that it returns to its' home position, dead centre.

The variable speed gearbox has a fast and slow setting. You activate this by switching the controller switch on the control panel then selecting fast or slow.

The beam of the searchlight can be adjusted to give a variety of beam types. Using the yellow remote focus button on the joystick panel, the desired beam can be achieved for any particular application. The beam will move continuously through 'spot' to 'flood'. In order to fix the beam type, simply release the button at the desired position.

The heaters specified on this equipment are self-regulating and will shut off when they reach the dew point temperature.

This product should not be used for any purpose other than for which it was designed. Any modifications to the product should not be undertaken without consulting the manufacturer.

Setting to Work

Safe service in use necessitates the strict observance of the following precautions.

- Any article fabricated from quartz or glass is inherently fragile and care should therefore be taken, at all times, when handling lamps;
- Eye protection must be worn when handling lamps that have been removed from their packaging materials. The protective jacket should not be removed from the lamp for safety reasons, as there is a remote possibility of the lamp shattering violently, especially if it is subjected to mechanical shock or vibration;
- Ensure that the power rating of the Xenon lamp to be fitted is suitable for the lamphouse and power supply equipment (rectifier);
- Always isolate the equipment from the supply before inserting a lamp;
- Before inserting the lamp ensure that all contacts are clean. Contacts must be renewed at the slightest sign of corrosion. Sanding or filing down corroded areas is not recommended as this will only make the conducting surface between the pin and lampholder smaller, thus causing the lamp to overheat;
- The inert gas (Xenon) used in XBO lamps is under a pressure of several bar even when the bulb is cold. FOR SAFETY REASONS THE LAMP MAY ONLY BE INSERTED INTO THE LAMPHOUSE WITH THE PROTECTIVE JACKET FITTED;
- Do not twist or bend the fused quartz bulb when fitting the lamp as mechanical stresses MUST be avoided;
- Ensure that the spring contacts firmly surround the pins on the cap of the lamp. Do not apply unnecessary force when tightening the screws;
- After inserting the lamp, ensure that there is sufficient axial play in the lampholder. The lamp must be capable of unimpeded expansion when it warms up to operating temperature. Mechanical forces must not be applied to the fused quartz bulb;
- Electrical leads must be arranged in such a way that there is a sufficient air gap (approximately 40mm) between them and the lamphouse, in order to prevent flashovers from the ignition voltage. All flexible leads must have strain-relieving clamps;
- Before putting the lamp into service for the first time, check the polarity of the electrical connections. INCORRECT POLARITY WILL CAUSE IMMEDIATE DESTRUCTION OF THE LAMP;
- Before the protective jacket is removed, suitable protection must be worn i.e face mask and gloves with wrist protection;
- Never touch the quartz bulb with bare hands, as fingerprints will make the glass cloudy and cause a severe loss of light. This may also cause recrystallisation and thus weaken the bulb material. Should the bulb be inadvertently touched, remove fingerprints with methylated spirit and a clean, soft paper towel. The bulb should then be wiped with distilled water. NOTE: ALWAYS WEAR MASK AND GLOVES DURING CLEANING);
- All packaging and the protective jacket must be retained for re-use. Whenever removing a lamp, the protective jacket must always be used for safety reasons;

Notes:

1) XBO lamps are designed for dc operation only. The dc current may only be varied within the limits of the current control range. An XBO lamp operates best at rated current; over the life of the lamp, the current may be increased to its maximum value to compensate for loss of light. The output of the lamp can be reduced by operating the lamp at minimum current but this does not prolong the life of the lamp;
2) For safety reasons, XBO lamps should be replaced once they reach the end of their average lamp life, and not later than 1.25 times their average lamp life. After this time there is an increased risk of the lamp exploding;
3) The anode (positive cap marked '+') must be on top when the lamp is inserted in the vertical position. If the anode is incorrectly inserted the arc will be unstable, the bulb will blacken more quickly and the lamp will prematurely fail;
4) The HT lead from the high voltage terminal of the ignitor, must be connected to the cathode (negative cap marked '-'). If the lamp is connected with the wrong polarity it will be irreparably damaged after a very short time.
5) In all circumstances the lamp manufacturers data should be referred to when dealing with lamps.

FB003

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7- Fault Finding

All fault finding must be conducted by a competent person or qualified Electrical Engineer.

Please refer to the following table for the trouble-shooting of Xenon lamps.

Fault	Cause	Remedy
■ Wrong Polarity	■ Lamp incorrectly fitted ■ Faulty wiring	■ Anode (large electrode) must always be on top in vertical burning position ■ Check polarity, transpose connections if necessary
■ Cap overheated ■ Cap temperature above 230°C	■ Faulty contacts ■ Cooling equipment defective	■ Check terminals, tighten or renew ■ Check cooling equipment and replace if necessary
■ Arc unsteady	■ Lamp operated outside current control range ■ Magnetic stabilisation for horizontal operation defective	■ Correct current setting ■ Check magnetic stabilisation
■ Bulb draws in air	■ Crack in graded seal caused by overheated cap ■ Maximum cap temperature 230°C	■ Check terminals - tighten or renew
■ Glass erosion on fused quartz bulb	■ Lamp operated outside current control range ■ Lamp service life exceeded	■ Correct current setting ■ Check meter
■ Electrodes damaged ■ Premature blackening	■ Current ripple too high ■ Auxiliary mirror incorrectly adjusted	■ Have power supply inspected ■ Adjust auxiliary mirror
■ Asymmetrical blackening of lamp (in horizontal burning position)	■ Lamp operated too long in same position	■ Turn lamp through 180° after half service life

Failure of Lamp to Ignite

In the event of the xenon lamp failing to light the following steps should be taken:

1) Check that the mains supply is connected to the input of the PSU. On operating the switch, if the lamp does not light, switch off mains supply and check all fuses;
2) On pressing remote starting switch the lamp still does not ignite, check the searchlight head. On your command get an operator to activate the starting switch for approximately 10 seconds. During this time listen for any noise (cracking or hissing) coming from within the barrel. If this arcing is heard switch off the supply at the mains. Remove the rear bezel to expose the two supply leads to the xenon lamp. Using a dry cloth wipe these leads to remove any dust, moisture or condensation that may have formed around the inside of the barrel. Replace the rear bezel, ensuring the latches are securely fastened, and perform the check again, listening for the cracking. If the lamp still fails to ignite, switch off at the mains and replace the xenon lamp in accordance with the safety procedures within this manual and the manufacturers information.

Any further tests to be carried out with regards to lamp failure must be conducted by a competent electrical engineer and should not be carried out in an explosive atmosphere.

3) Before a xenon lamp will ignite, the electrically insulated gas between the electrodes must be ionised. This is done by the ignitor which produces a high frequency voltage (up to 30,000 volts or higher). The ignitor is activated by switching the lamp on and a crackling or hissing noise should be heard. The ignitor is housed within the rear of the searchlight barrel. This is a totally encapsulated unit and repair is not advised. If found to be faulty a new ignitor must be fitted.

Failure of Remote Focus Facility

The remote focus mechanism is controlled by a small electric motor situated at the rear of the searchlight barrel. If the focus of the light fails the following procedure should be adopted:

1) Remove the rear bezel from searchlight barrel and examine focus mechanism. If parts have become loose, tighten fasteners. The mechanism operates on a lever action and this should be checked for correct positioning;
2) If the mechanism is okay, check the supply to the motor. This can be done by simply placing a multi-meter across the motor terminals;
3) If supply is present, this indicates that the motor has failed. Replace the focus motor ensuring that the assembly is correct;
4) If no supply is present there is a fault in the Motor Gearbox or on the Joystick Control Panel. This should be examined and rectified accordingly.

Note: If a fault occurs on the motor gearbox, the unit should be returned to Francis Searchlights Limited for fault evaluation and repair.

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8 - Maintenance and Servicing

In order to prolong the service life and performance of your searchlight, the following maintenance guidelines are recommended:

- Maintenance checks should be conducted before very voyage or at least every three months;
- Before checking, disconnect the equipment from the supply;
- Visually inspect the condition of the equipment;
- Any major or minor structural damage should be rectified immediately in order to reduce sympathetic wear;
- After inspection it may be necessary to clean the inside of the searchlight. The following procedure should be adhered to:
    - Remove the front bezel;
    - Clean the front glass inside and out using a proprietary glass cleaner or metal polish;
    - Clean the reflector if required;
    - Check the reflector mounting gaskets. If signs of corrosion or damage are evident, replace as necessary;
    - Ensure that the lampholder is free from corrosion or other damage;
    - Check earthing point for conductivity;
- It is advisable to check all seals and gaskets for signs of degradation. Renew if necessary;
- Upon completing all maintenance requirements the searchlight should be tested for full working order (approximately 20 minutes).

If in any doubt as to the correct servicing procedures to adopt please contact your distributor/agent or the manufacturer who will be able to advise the best course of action for your product.

9 – General Assembly, Items List & Wiring Diagrams

Drawing Number	Description
C24609	400v 3Kw Xenon RC Wiring Diagram variable speed
S36422	PSU Internal Wiring
C24609-2	Wiring Schematic
	PSU N3 100E Out Line Drawing
A6065	FX560RC 3Kw variable speed G.A.
	FX560RC 3Kw variable speed G.A Set List Sheet 1 & 2
C24607	Barrel Assembly Sheet 1 & 2
	Barrel Assembly Set List Sheet 3, 4 & 5
C24606	Motor Unit Assembly
	Motor Unit Assembly Set List Sheet 6
C24616	Motor Top Assembly Sheet 1 & 2
	Motor Top Assembly Set List Sheet 7, 8, 9 & 10
C24627	Control Panel
A6065-2	G.A. Dimensions, Weight & Materials Breakdown
A6065-3	G.A. Section View
C22470	Terminal Rail Assembly
C24606-2	Motor Unit Cable Entries
C21501	Motor Unit Fixing Holes

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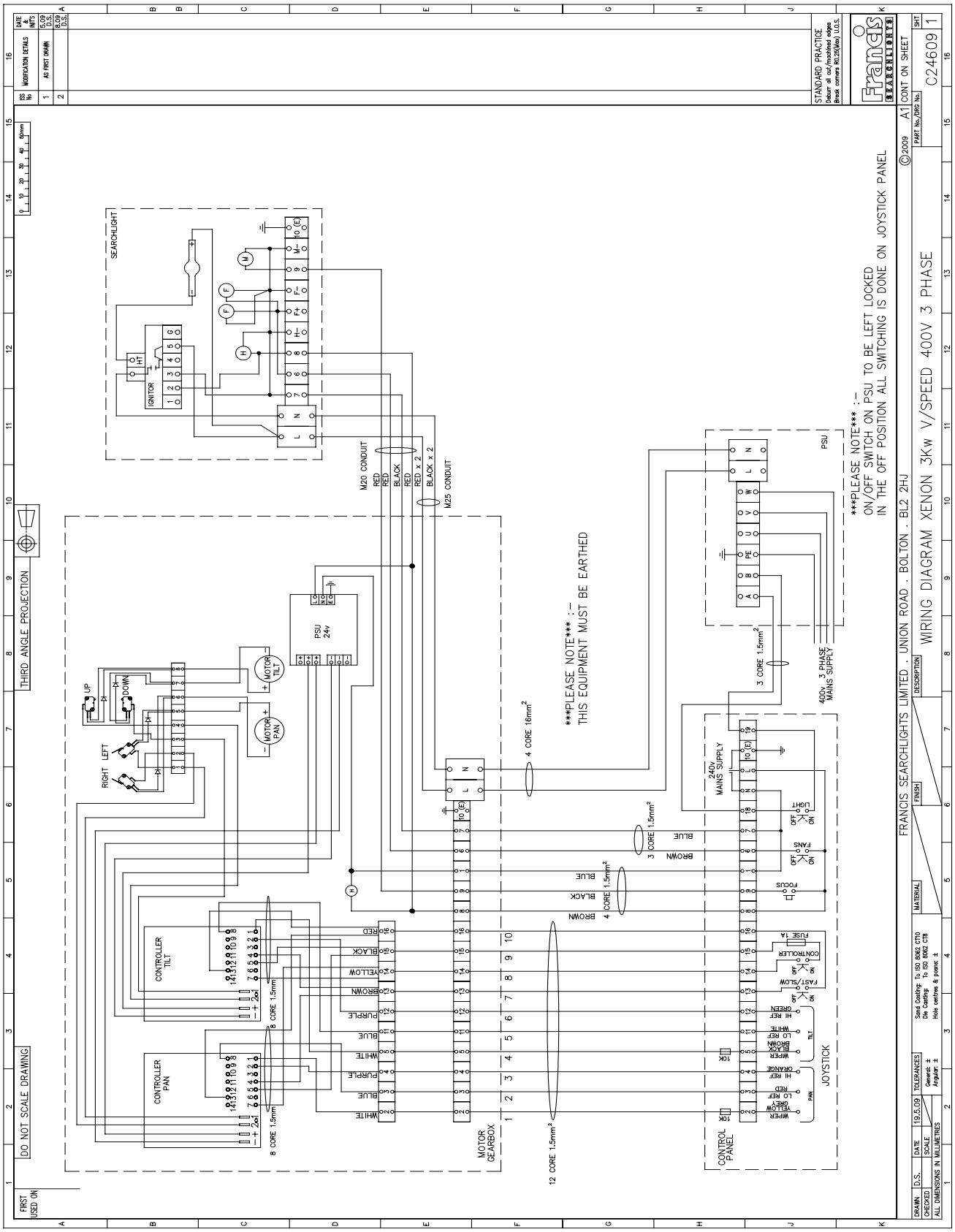
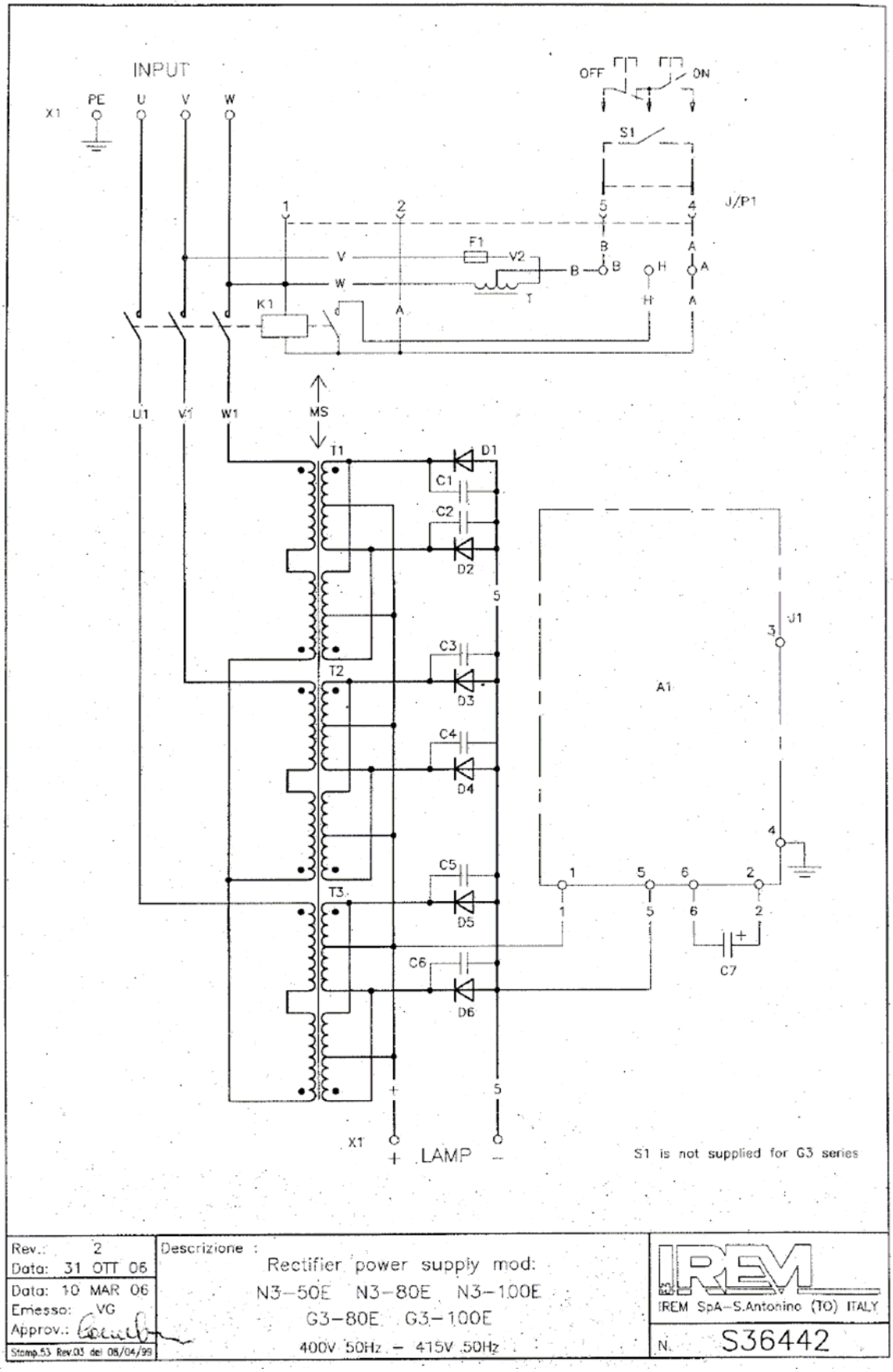

FRANCIS SEARCHLIGHTS LIMITED . UNION ROAD . BOLTON . BL2 2HJ
WIRING DIAGRAM XENON 3Kw V/SPEED 400V 3 PHASE
C24609
PLEASE NOTE :-
ON/OFF SWITCH ON PSU TO BE LEFT LOCKED
IN THE OFF POSITION ALL SWITCHING IS DONE ON JOYSTICK PANEL
PLEASE NOTE :-
THIS EQUIPMENT MUST BE EARTHED
SEARCHLIGHT
IGNITOR
M20 CONDUIT
RED
RED
BLACK
RED
RED x 2
BLACK x 2
M25 CONDUIT
PSU
24v
PSU
4 CORE 16mm²
3 CORE 1.5mm²
400v 3 PHASE
MAINS SUPPLY
240v
MAINS SUPPLY
4 CORE 1.5mm²
BLUE
BLACK
BROWN
3 CORE 1.5mm²
BLUE
BROWN
12 CORE 1.5mm²
MOTOR
GEARBOX
CONTROL
PANEL
JOYSTICK
CONTROLLER
TILT
CONTROLLER
PAN
8 CORE 1.5mm
8 CORE 1.5mm
MOTOR
TILT
MOTOR
PAN
UP
DOWN
LEFT
RIGHT
LIGHT
FANS
FOCUS
FAST/SLOW
CONTROLLER
FUSE 1A
HI REF
LO REF
WIPER
TILT
PAN
10K
10K
DO NOT SCALE DRAWING
THIRD ANGLE PROJECTION
FIRST USED ON
STANDARD PRACTICE
Francis Searchlights

BD004


INPUT
PE
U
V
W
X1
OFF
ON
S1
J/P1
F1
V2
K1
U1
V1
W1
MS
T1
T2
T3
D1
D2
D3
D4
D5
D6
C1
C2
C3
C4
C5
C6
C7
A1
J1
X1
+
LAMP
–
S1 is not supplied for G3 series
Rev.: 2
Data: 31 OTT 06
Data: 10 MAR 06
Emesso: VG
Approv.:
Stamp.53 Rev.03 del 08/04/99
Descrizione :
Rectifier power supply mod:
N3–50E N3–80E N3–100E
G3–80E G3–100E
400V 50Hz – 415V 50Hz
IREM SpA–S.Antonino (TO) ITALY
N. S36442

BD005

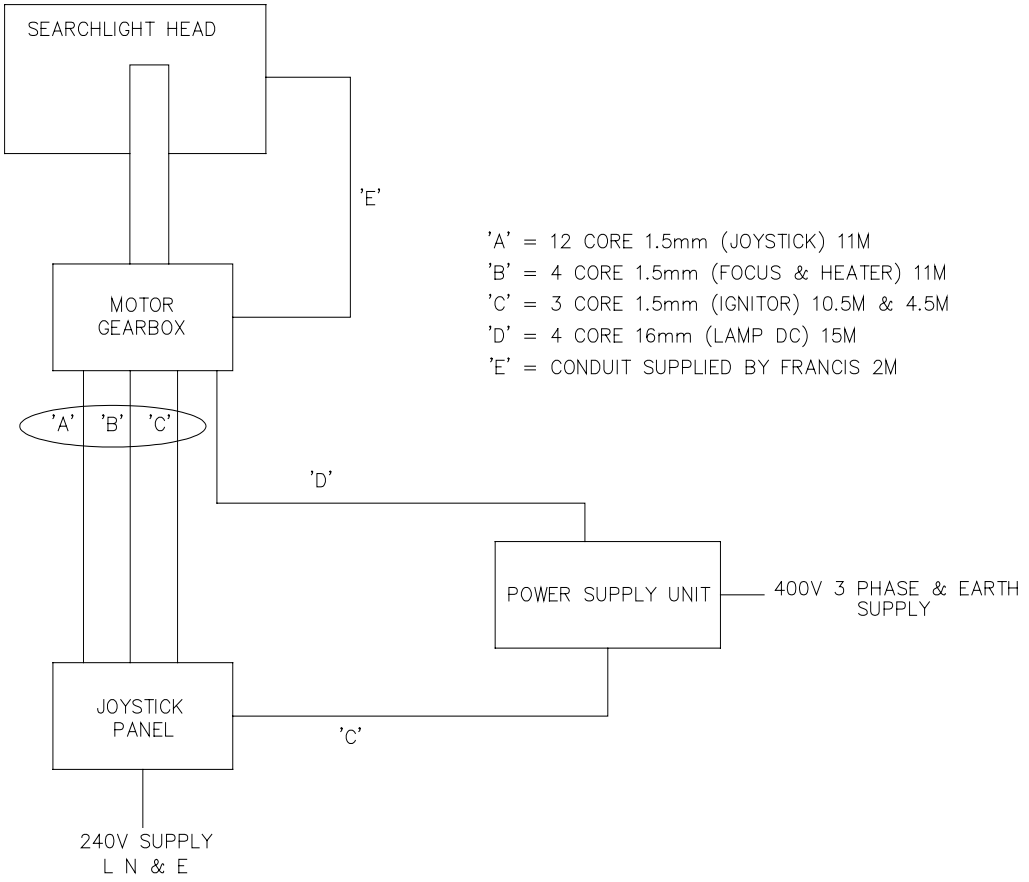
FIRST USED ON

DO NOT SCALE DRAWING

THIRD ANGLE PROJ

0 10 20 30 40 50mm

ISS No	MODIFICATION DETAILS	DATE & INIT'S
	AS FIRST DRAWN	



'A' = 12 CORE 1.5mm (JOYSTICK) 11M
'B' = 4 CORE 1.5mm (FOCUS & HEATER) 11M
'C' = 3 CORE 1.5mm (IGNITOR) 10.5M & 4.5M
'D' = 4 CORE 16mm (LAMP DC) 15M
'E' = CONDUIT SUPPLIED BY FRANCIS 2M

STANDARD PRACTICE
Deburr all cut/machined edges
Break corners R0.25(Max) U.O.S.

TOLERANCES U.O.S: –
General: ±
Angular: ±
Hole centres & posns: ±

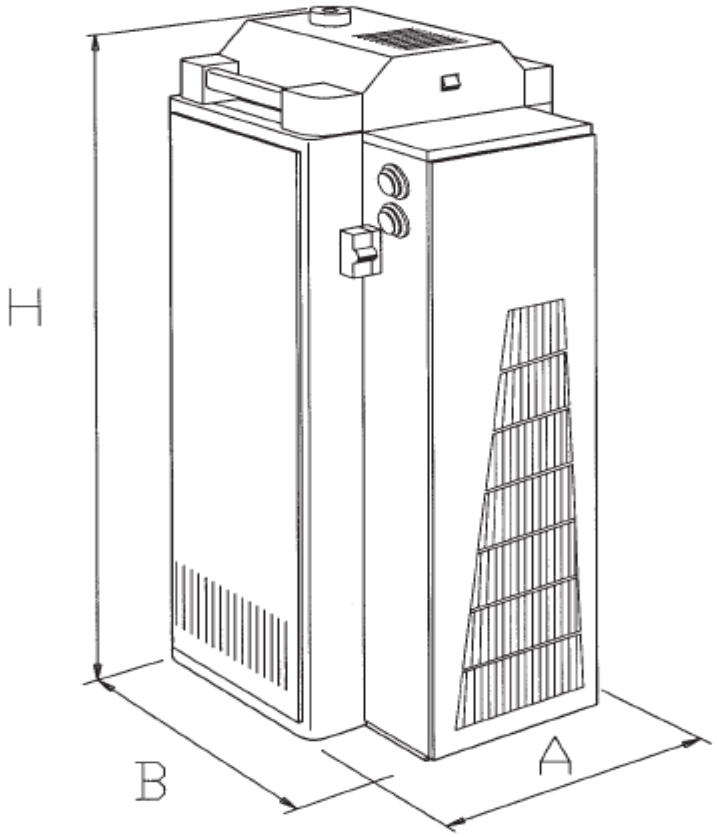
Sand Casting: To ISO 8062 CT10
Die Casting: To ISO 8062 CT8

Francis SEARCHLIGHTS

FRANCIS SEARCHLIGHTS LIMITED. UNION ROAD. BOLTON. BL2 2HJ © A3 CONT ON SHEET

DRAWN		DATE		MATERIAL	FINISH	DESCRIPTION	PART No./DRG No.	SHT
CHECKED		SCALE				WIRING SCHEMATIC	C24609–2	
ALL DIMENSIONS IN MILLIMETRES								

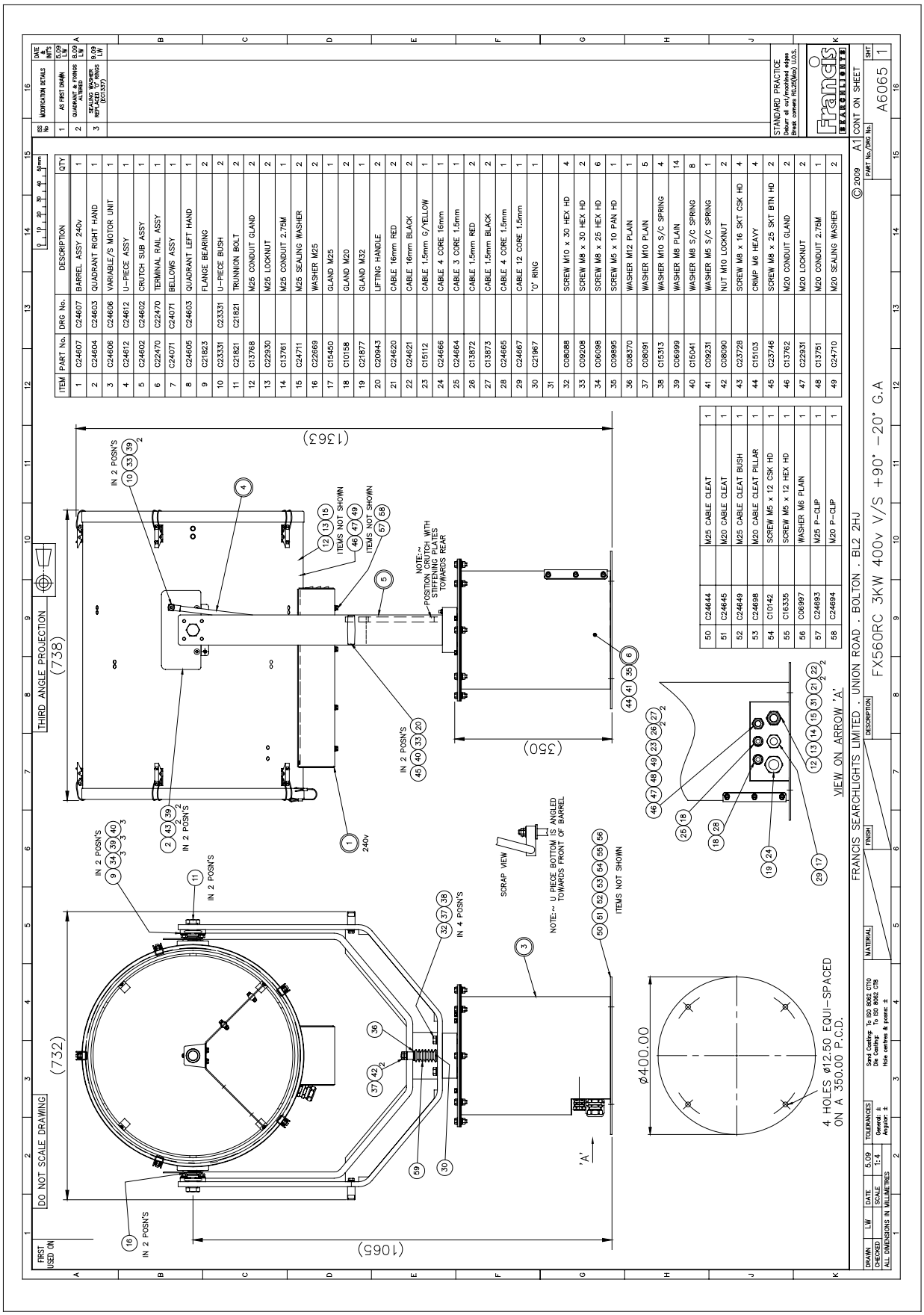
Outline drawing



Model	Dimensions (mm) (A x B x H)	Weight (kg)
N3-50E	3320x380x770	70
N3-80E	320x380x770	90
N3-100E	320x380x770	108
N3-150E	320x380x770	130
N3-180E	320x380x770	158

Heat Dissipation: - The efficiency **n** of the N3-E series is more than 0.8, so that you can lose maximum (in heat) the following watts.
DeltaP[W]=Pout[W]* (1/**n**-1) with n=0.8 → DeltaP max[W]=Pout[W]* 0.25

Mount PSU in Vertical position as shown.
BD006



ITEM	PART No.	DRG No.	DESCRIPTION	QTY
1	C24607	C24607	BARREL ASSY 240v	1
2	C24604	C24603	QUADRANT RIGHT HAND	1
3	C24606	C24606	VARIABLE/S MOTOR UNIT	1
4	C24612	C24612	U-PIECE ASSY	1
5	C24602	C24602	CRUTCH SUB ASSY	1
6	C22470	C22470	TERMINAL RAIL ASSY	1
7	C24071	C24071	BELLOWS ASSY	1
8	C24605	C24603	QUADRANT LEFT HAND	1
9	C21823		FLANGE BEARING	2
10	C23331	C23331	U-PIECE BUSH	2
11	C21821	C21821	TRUNNION BOLT	2
12	C13768		M25 CONDUIT GLAND	2
13	C22930		M25 LOCKNUT	2
14	C13761		M25 CONDUIT 2.75M	1
15	C24711		M25 SEALING WASHER	2
16	C22669		WASHER M25	2
17	C15450		GLAND M25	1
18	C10158		GLAND M20	2
19	C21877		GLAND M32	1
20	C20943		LIFTING HANDLE	2
21	C24620		CABLE 16mm RED	2
22	C24621		CABLE 16mm BLACK	2
23	C15112		CABLE 1.5mm G/YELLOW	1
24	C24666		CABLE 4 CORE 16mm	1
25	C24664		CABLE 3 CORE 1.5mm	1
26	C13872		CABLE 1.5mm RED	2
27	C13873		CABLE 1.5mm BLACK	2
28	C24665		CABLE 4 CORE 1.5mm	1
29	C24667		CABLE 12 CORE 1.5mm	1
30	C21967		'O' RING	1
31				
32	C08088		SCREW M10 x 30 HEX HD	4
33	C09208		SCREW M8 x 30 HEX HD	2
34	C06098		SCREW M8 x 25 HEX HD	6
35	C09895		SCREW M5 x 10 PAN HD	1
36	C08370		WASHER M12 PLAIN	1
37	C08091		WASHER M10 PLAIN	5
38	C15313		WASHER M10 S/C SPRING	4
39	C06999		WASHER M8 PLAIN	14
40	C15041		WASHER M8 S/C SPRING	8
41	C09231		WASHER M5 S/C SPRING	1
42	C08090		NUT M10 LOCKNUT	2
43	C23728		SCREW M8 x 16 SKT CSK HD	4
44	C15103		CRIMP M6 HEAVY	4
45	C23746		SCREW M8 x 25 SKT BTN HD	2
46	C13762		M20 CONDUIT GLAND	2
47	C22931		M20 LOCKNUT	2
48	C13751		M20 CONDUIT 2.75M	1
49	C24710		M20 SEALING WASHER	2
50	C24644		M25 CABLE CLEAT	1
51	C24645		M20 CABLE CLEAT	1
52	C24649		M25 CABLE CLEAT BUSH	1
53	C24698		M20 CABLE CLEAT PILLAR	1
54	C10142		SCREW M5 x 12 CSK HD	1
55	C16335		SCREW M5 x 12 HEX HD	1
56	C06997		WASHER M6 PLAIN	1
57	C24693		M25 P-CLIP	1
58	C24694		M20 P-CLIP	1

ISS No.	MODIFICATION DETAILS	DATE INIT.
1	AS FIRST DRAWN	5.09 LW
2	QUADRANT & FITTINGS ADDED	6.09 LW
3	SEALING WASHER REPLACED 'O' RINGS (ECO127)	9.09 LW

STANDARD PRACTICE
Deburr all cut/machined edges
Break corners R0.25(Max) U.O.S.

FRANCIS SEARCHLIGHTS LIMITED . UNION ROAD . BOLTON . BL2 2HJ

FX560RC 3KW 400v V/S +90° -20° G.A

DRAWN LW DATE 5.09 | TOLERANCES | MATERIAL | FINISH | DESCRIPTION
CHECKED SCALE 1:4 | Sand Casting To ISO 8062 CT10 | Machined To ISO 8062 CT8 | Linear: ± | Angular: ± | Hole centres & pcons: ±
ALL DIMENSIONS IN MILLIMETRES

© 2009 A1 CONT ON SHEET | SHT 1
PART No./DRG No. A6065

AS001

DRAWING REFERENCE No.

Francis SEARCHLIGHTS

COMBINED MODEL AND SET LIST

PRODUCT TITLE FX560RC 3KW (+90° -20°) G.A

SHEET NUMBER 1 CONT. ON SHT. 2 DATE MAY 09

ISSUE No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
CHANGE No.	AFD	8.09													
FIN															
DES NO.	A6065														
MODEL	240/400v														

GENERAL ARRANGEMENT DRG.No.

	PART No.	DESCRIPTION	BL	S1	S2	S3	S4	S5	S6	Material	Drg.No.		Qty	Qty	Qty	Qty	Qty	Qty	
	C-A6065	FX560RC V/S 3KW 240/400v		01							A6065								
1	24607	BARREL ASSY 240v		01							C24607		1						
2	24604	R/H QUADRANT S/ASSY		01	08	39					C24603		1						
3	24606	MOTOR UNIT ASSY		01							C24606		1						
4	24612	U-PIECE ASSY		01	08	39					C24612		1						
5	24602	CRUTCH SUB ASSY		01	08	39					C24602		1						
6	22470	TERMINAL RAIL ASSY		01							C22470		1						
7	24701	BELLOWS ASSY		01							C24071		1						
8	24605	L/H QUADRANT S/ASSY		01	08	39					C24603		1						
9	21823	FLANGE BEARING		00	01						C21823		2						
10	23331	U-PIECE BUSH		00	01					12525	C23331		2						BRASS
11	21821	TRUNNION BOLT		00	01					10819	C21821		2						STAINLESS STEEL
12	13768	M25 CONDUIT GLAND		00									2						NYLON
13	22930	M25 LOCKNUT		00									2						
14	13761	M25 CONDUIT		00									1						2.75M
15	23578	M25 GLAND WASHER		00									2						
16	22669	WASHER M25		00									2						
17	15450	GLAND M25		00									1						
18	10158	GLAND M20		00									2						
19	21877	GLAND M32		00									1						
20	20943	LIFTING HANDLE		00									2						
21	24620	CABLE		00	01								2						5.3 MTRS 16mm S/C SILICONE RED
22	24621	CABLE		00	01								2						5.3 MTRS 16mm S/C SILICONE BLACK
23	15112	CABLE		00	01								1						5.3 MTRS 1.5mm S/C SILICONE GREEN / YELLOW
24	24666	CABLE		00	01								1						14 MTRS 4 CORE 16mm
25	24664	CABLE		00	01								1						14 MTRS 3 CORE 1.5mm
26	13872	CABLE		00	01								2						5.3 MTRS SINGLE CORE 1.5mm RED
27	13873	CABLE		00	01								2						5.3 MTRS SINGLE CORE 1.5mm BLACK
28	24665	CABLE		00	01								1						10 MTRS 4 CORE 1.5mm BUTYL H07RNF BS6500
29	24667	CABLE		00	01								1						10 MTRS 12 CORE 1.5mm

DRAWING REFERENCE No.

Francis SEARCHLIGHTS

COMBINED MODEL AND SET LIST

PRODUCT TITLE FX560RC 3KW

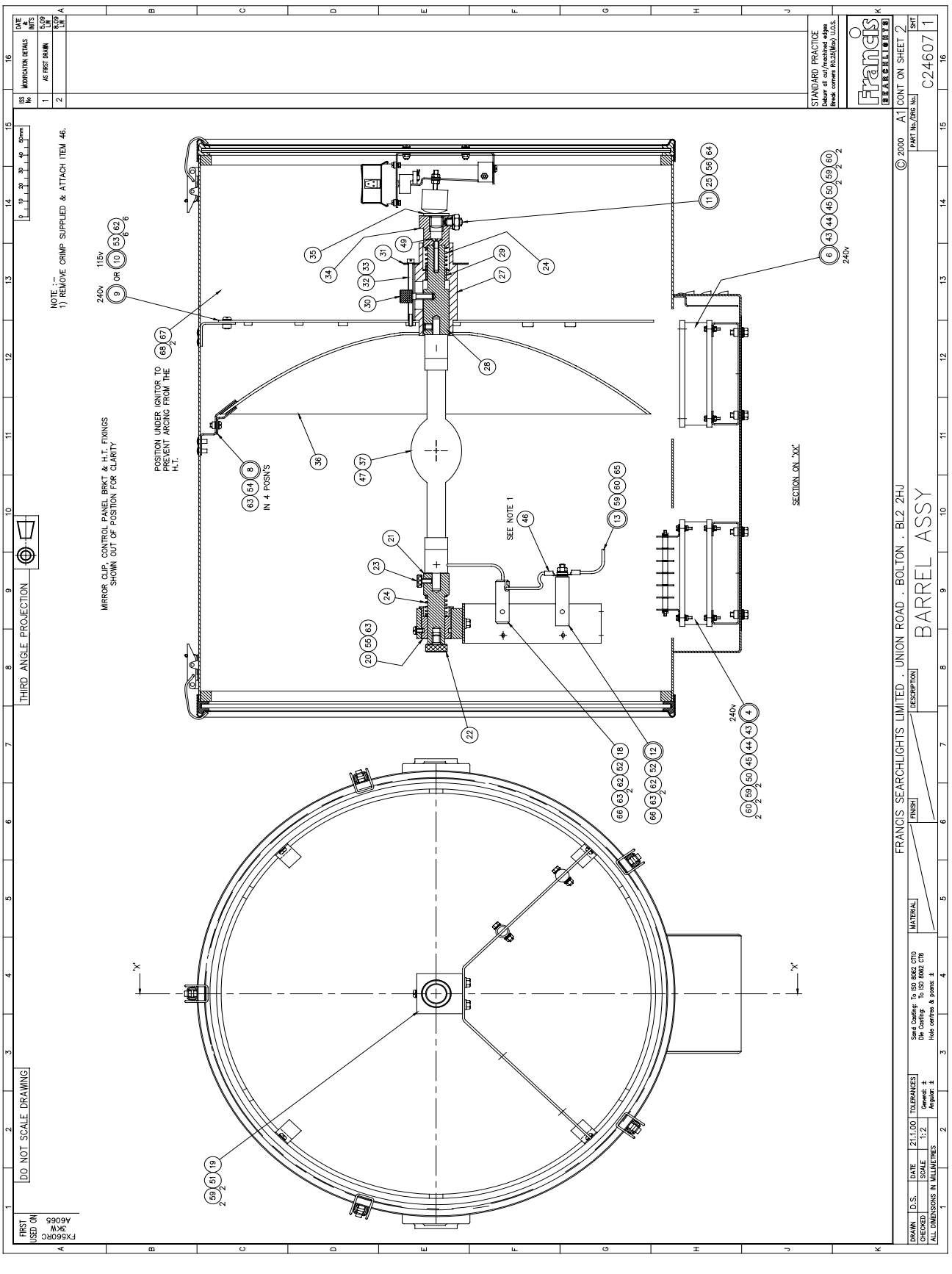
(+90° −20°) G.A

SHEET NUMBER 2 CONT. ON SHT. 3 DATE MAY 09

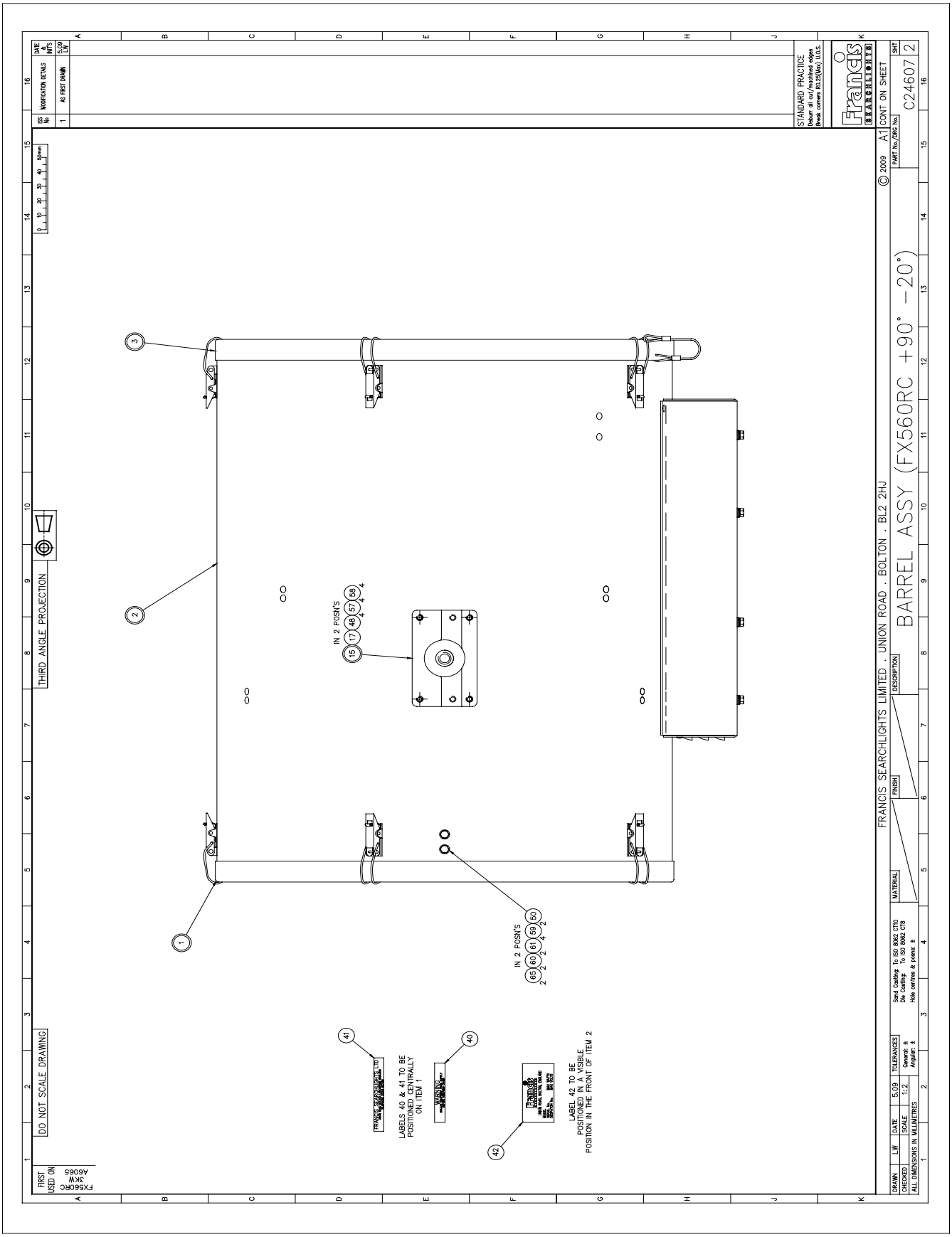
GENERAL ARRANGEMENT DRG.No.

ISSUE No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
CHANGE No.	AFD	8.09													

	PART No.	DESCRIPTION	BL	S1	S2	S3	S4	S5	S6	Material	Drg.No.	FIN	MODEL DES NO. A6065 240/400v	Qty	Qty	Qty	Qty	Qty	Qty	Qty	Qty	Qty	Qty	
30	21967	'O' RING		00										1										
31	23580	'O' RING		00										4										
32	8088	SCREW		00										4										M10 x 30 HEX HD STN.S TO BS6105 A4 CLASS 70
33	9208	SCREW		00										2										M8 x 30 HEX HD STN.S TO BS6105 A4 CLASS 70
34	6098	SCREW		00										6										M8 x 25 HEX HD STN.S TO BS6105 A4 CLASS 70
35	9895	SCREW		00										1										M5 x 10 PAN HD STN.S TO BS6105 A4 CLASS 70
36	8370	WASHER		00										1										M12 PLAIN STN.S TO BS6105 A4 CLASS 70
37	8091	WASHER		00										5										M10 PLAIN STN.S TO BS6105 A4 CLASS 70
38	15313	WASHER		00										4										M10 S/C SPRING STN.S TO BS6105 A4 CLASS 70
39	6999	WASHER		00										14										M8 PLAIN STN.S TO BS6105 A4 CLASS 70
40	15041	WASHER		00										8										M8 S/C SPRING STN.S TO BS6105 A4 CLASS 70
41	9231	WASHER		00										1										M5 S/C SPRING STN.S TO BS6105 A4 CLASS 70
42	08090	NUT		00										2										M10 LOCKNUT STN.S TO BS6105 A4 CLASS 70
43	23728	SCREW		00										4										M8 x 16 SKT CSK HD STN.S TO BS6105 A4 CLASS 70
44	15103	CRIMP		00										4										
45	23746	SCREW		00										2										M8 x 25 SKT BTN HD STN.S TO BS6105 A4 CLASS 70
46	13762	M20 CONDUIT GLAND		00										2										
47	22931	M20 LOCKNUT		00										2										
48	13751	M20 CONDUIT		00										1										2.75M
49	23579	M20 GLAND WASHER		00										2										
50	24644	M25 CABLE CLEAT		00										1										
51	24645	M20 CABLE CLEAT		00										1										
52	24649	M25 CABLE CLEAT BUSH		00	01					1640	C24649			1										BRASS
53	24698	M20 CABLE CLEAT PILLAR		00	01					1640	C24698			1										BRASS
54	10733	SCREW		00										1										M6 x 12 HEX HD STN.S TO BS6105 A4 CLASS 70
55	10142	SCREW		00										1										M5 x 12 CSK HD STN.S TO BS6105 A4 CLASS 70
56	16335	SCREW		00										1										M5 x 12 HEX HD STN.S TO BS6105 A4 CLASS 70
57	6997	WASHER		00										1										M6 PLAIN STN.S TO BS6105 A4 CLASS 70
58	24693	P CLIP 25mm		00										1										
59	24694	P CLIP 20mm		00										1										


FRANCIS SEARCHLIGHTS LIMITED . UNION ROAD . BOLTON . BL2 2HJ
BARREL ASSY
c24607 1
DO NOT SCALE DRAWING
THIRD ANGLE PROJECTION
NOTE :-
1) REMOVE CRIMP SUPPLIED & ATTACH ITEM 46.
MIRROR CLIP, CONTROL PANEL BRKT & H.T. FIXINGS SHOWN OUT OF POSITION FOR CLARITY
POSITION UNDER IGNITOR TO PREVENT ARCING FROM THE H.T.
IN 4 POSN'S
SEE NOTE 1
SECTION ON 'XX'
240v
115v
OR
FX560RC
3KW
A6065

AS004


FRANCIS SEARCHLIGHTS LIMITED . UNION ROAD . BOLTON . BL2 2HJ
BARREL ASSY (FX560RC +90° −20°)
C24607 2
THIRD ANGLE PROJECTION
DO NOT SCALE DRAWING
IN 2 POSN'S
LABELS 40 & 41 TO BE POSITIONED CENTRALLY ON ITEM 1
LABEL 42 TO BE POSITIONED IN A VISIBLE POSITION IN THE FRONT OF ITEM 2
STANDARD PRACTICE
© 2009 A1 CONT ON SHEET

AS005

DRAWING REFERENCE No.

Francis SEARCHLIGHTS

COMBINED MODEL AND SET LIST

PRODUCT TITLE **FX560RC 3KW**

(+90° −20°) BARREL ASSY

SHEET NUMBER 3 CONT. ON SHT. 4 DATE MAY 09

GENERAL ARRANGEMENT DRG.No.

ISSUE No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
CHANGE No.	AFD														
MODEL	240/400v														
DES NO.	A6065														
FIN															

	PART No.	DESCRIPTION	BL	S1	S2	S3	S4	S5	S6	Material	Drg.No.	Qty	Qty	Qty	Qty	Qty	Qty	Qty	Qty	Qty	Qty	
	C-																					
	24607	BARREL ASSY 240v		01							C24607											
1	22782	REAR DOME ASSY		01							C22782	1										
2	24629	BARREL SUB ASSY		01							C20810	1										
3	20880	FRONT BEZEL ASSY		01							C20880	1										
4	24599	FAN / VANE ASSY 240v		01							C24599	1										
5																						
6	24598	FAN ASSY 240v		01							C24598	1										
7																						
8	20825	MIRROR CLIP S/ASSY		01							C20825	4										
9	20820	CONTROL PANEL ASSY 240v		01							C20820	1										
10																						
11	21077	REAR L/H LEAD ASSY		01							C21077	1										
12	20690	H.T. PILLAR ASSY		01							C20690	1										
13	20828	FRONT L/H LEAD ASSY		01							C20828	1										
14																						
15	20835	SIDEPLATE S/ASSY		01	08	39					C20835	2										
16																						
17	20836	SIDEPLATE STIFFENING PLATE		00	01	08	18			4702	C20836	2										ALUMINIUM
18	20689	H.T. GUIDE		00	01					10062	C20689	1										P.T.F.E
19	11338	GUIDE BLOCK		00	01	08	18			22088	X2890	1										ALUMINIUM
20	11339	INSULATOR		00	01					12527	X2889	1										P.T.F.E
21	20387	FRONT L/H SOCKET		00	01	22				1610	C20387	1										BRASS
22	11336	GRIP SCREW		00	01	22				1596	X2856	1										BRASS
23	11333	CLAMP SCREW		00	01	22				1635	X2856	1										BRASS
24	11335	SPRING		00							X2860	2										
25	11334	TERMINAL STUD		00	01					10564	X2897	1										STAINLESS STEEL

CAD = DRG-SHT1 REV 0

DRAWING REFERENCE No.

Francis SEARCHLIGHTS

COMBINED MODEL AND SET LIST

PRODUCT TITLE **FX560RC 3KW**

(+90° −20°) BARREL ASSY

SHEET NUMBER 4 CONT. ON SHT. 5 | DATE MAY 09

ISSUE No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
CHANGE No.	AFD	8.09													

											FIN											
											DES NO.	A6065										
											MODEL	240/400v										
	GENERAL ARRANGEMENT DRG.No.																					
	PART No.	DESCRIPTION	BL	S1	S2	S3	S4	S5	S6	Material	Drg.No.		Qty	Qty	Qty	Qty	Qty	Qty	Qty	Qty	Qty	Qty	
	C–																						
26																							
27	11359	INSULATOR BODY		00	01					9828	X2854		1										P.T.F.E
28	20838	REAR L/H SOCKET		00	01	22				17056	C20838		1										BRASS
29	11363	GUIDE BUSH		00	01					1592	X2848		1										BRASS
30	11362	CLAMP SCREW		00	01	22				1635	X2852		1										BRASS
31	11357	RETAINING PLATE		00	01	08	39			15988	X2852		1										ALUMINIUM
32	11356	SCREW		00									3										M5 x 80 PAN HEAD STN.S TO BS6105 A4 CLASS 70
33	11492	SCREW INSULATOR		00	01					16505	X2852		3										SILICONE
34	11364	CONNECTING BLOCK		00	01	22				3882	X2853		1										BRASS
35	11365	FOCUS PAD		00	01					12647	X2848		1										P.T.F.E
36	6779	REFLECTOR		00									1										
37	20195	LAMP		00									A/R										
38																							
39																							
40	10155	WARNING LABEL		00							043 927		1										
41	4900	FRANCIS EXTERIOR LABEL		00									1										
42	10154	NAMEPLATE LABEL		00									1										
43	4481	SLEEVING		00	01								A/R										
44	13872	CABLE		00	01								A/R										
45	13873	CABLE		00	01								A/R										
46	15103	RING TAG		00									1										
47	20205	GRUBSCREW		00									1										M8 x 10 STN.S TO BS6105 A4 CLASS 70

CAD = DRG-SHT1 REV 0

DRAWING REFERENCE No.

Francis SEARCHLIGHTS

COMBINED MODEL AND SET LIST

PRODUCT TITLE **FX560RC 3KW**

(+90° −20°) BARREL ASSY

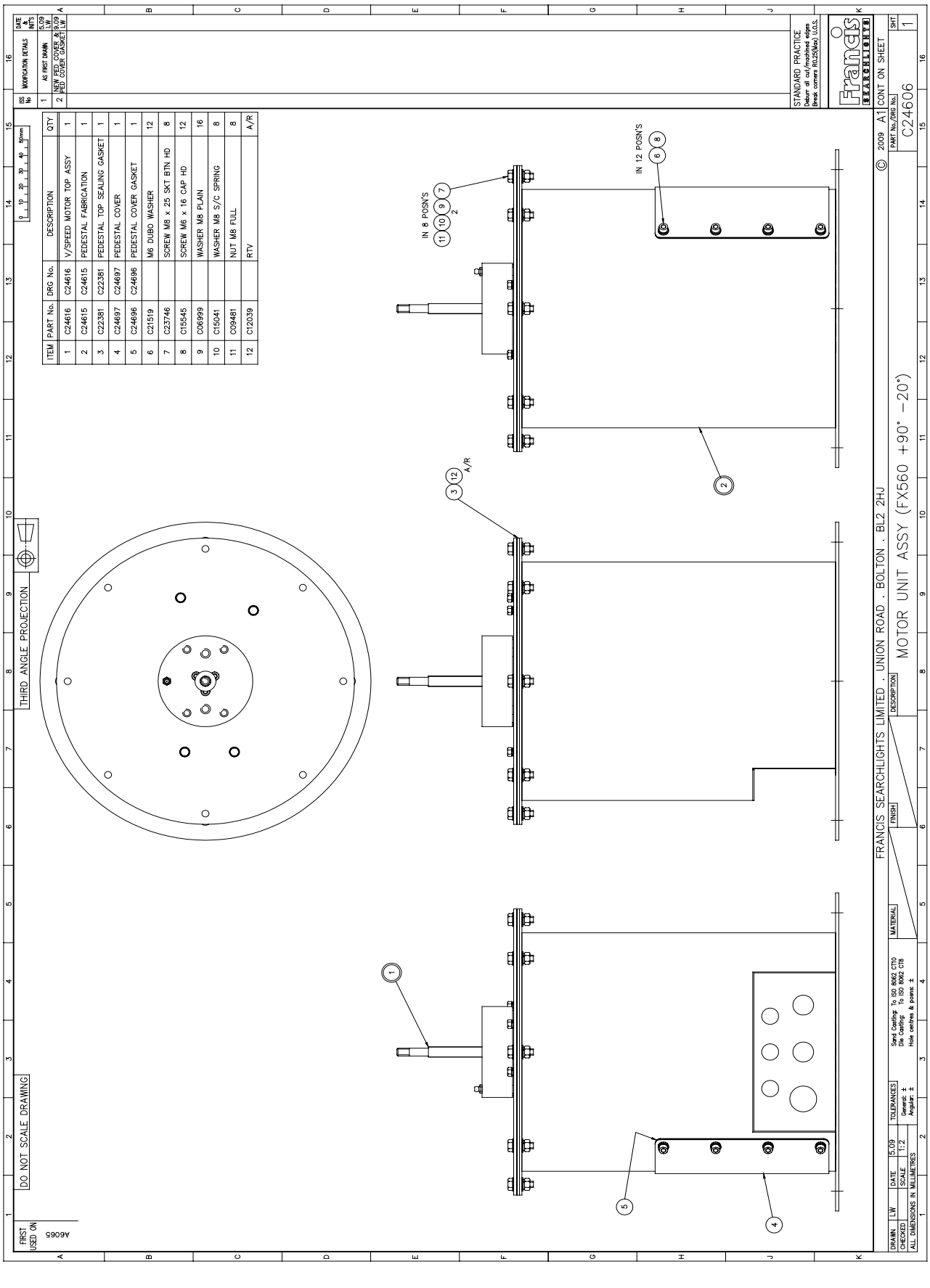
SHEET NUMBER 5 CONT. ON SHT. 6 DATE MAY 09

GENERAL ARRANGEMENT DRG.No.

ISSUE No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
CHANGE No.	AFD	8.09													
FIN															
DES NO. A6065															
MODEL 240/400v															

	PART No.	DESCRIPTION	BL	S1	S2	S3	S4	S5	S6	Material	Drg.No.	Qty	Qty	Qty	Qty	Qty	Qty	Qty	Qty	Qty	Qty	
	C-																					
48	11970	SCREW		00								8										M8 x 20 HEX HD STN.S TO BS6105 A4 CLASS 70
49	10146	SCREW		00								1										M6 x 12 CSK HD STN.S TO BS6105 A4 CLASS 70
50	8210	SCREW		00								8										M6 x 16 HEX HD STN.S TO BS6105 A4 CLASS 70
51	10733	SCREW		00								2										M6 x 12 HEX HD STN.S TO BS6105 A4 CLASS 70
52	16538	SCREW		00								2										M5 x 25 HEX HD STN.S TO BS6105 A4 CLASS 70
53	10206	SCREW		00								6										M5 x 12 PAN HD STN.S TO BS6105 A4 CLASS 70
54	9895	SCREW		00								4										M5 x 10 PAN HD STN.S TO BS6105 A4 CLASS 70
55	10140	SCREW		00								1										M5 x 8 PAN HD STN.S TO BS6105 A4 CLASS 70
56	15313	WASHER		00								1										M10 S/C SPRING STN.S TO BS6105 A4 CLASS 70
57	6999	WASHER		00								8										M8 PLAIN STN.S TO BS6105 A4 CLASS 70
58	15275	WASHER		00								8										M8 NYLON 6/6
59	6997	WASHER		00								15										M6 PLAIN STN.S TO BS6105 A4 CLASS 70
60	10554	WASHER		00								9										M6 S/C SPRING STN.S TO BS6105 A4 CLASS 70
61	15274	WASHER		00								4										M6 NYLON 6/6
62	8392	WASHER		00								10										M5 PLAIN STN.S TO BS6105 A4 CLASS 70
63	9231	WASHER		00								7										M5 S/C SPRING STN.S TO BS6105 A4 CLASS 70
64	8090	NUT		00								1										M10 LOCKNUT STN.S TO BS6105 A4 CLASS 70
65	6267	NUT		00								5										M6 FULL STN.S TO BS6105 A4 CLASS 70
66	8352	NUT		00								2										M5 FULL STN.S TO BS6105 A4 CLASS 70
67	17162	IGNITOR INSULATOR		00	01					17162	X4911	2										
68	125	FASTBOND		00								A/R										3M

CAD = DRG-SHT1 REV 0


ISS No
MODIFICATION DETAILS
DATE & INIT'S
1
AS FIRST DRAWN
5.09 LW
2
NEW PEDESTAL COVER GASKET
A 5.09 LW
STANDARD PRACTICE
Remove all burrs and sharp edges
Break corners R0.25(Max) U.O.S.
Francis
SEARCHLIGHTS
© 2009
A1
CONT ON SHEET
SHT
1
PART No./DRG No.
C24606
ITEM
PART No.
DRG No.
DESCRIPTION
QTY
1
C24616
C24616
V/SPEED MOTOR TOP ASSY
1
2
C24615
C24615
PEDESTAL FABRICATION
1
3
C22381
C22381
PEDESTAL TOP SEALING GASKET
1
4
C24697
C24697
PEDESTAL COVER
1
5
C24696
C24696
PEDESTAL COVER GASKET
1
6
C21519
M6 DUBO WASHER
12
7
C23746
SCREW M8 x 25 SKT BTN HD
8
8
C15545
SCREW M6 x 16 CAP HD
12
9
C06999
WASHER M8 PLAIN
16
10
C15041
WASHER M8 S/C SPRING
8
11
C09481
NUT M8 FULL
8
12
C12039
RTV
A/R
IN 8 POSN'S
IN 12 POSN'S
A/R
THIRD ANGLE PROJECTION
DO NOT SCALE DRAWING
FIRST USED ON
A6065
FRANCIS SEARCHLIGHTS LIMITED . UNION ROAD . BOLTON . BL2 2HJ
MOTOR UNIT ASSY (FX560 +90° −20°)
DESCRIPTION
FINISH
MATERIAL
TOLERANCES
Sand Castings To ISO 8062 CT10
Die Castings To ISO 8062 CT8
Hole centres & poems ±
General: ±
Angular: ±
DRAWN
LW
DATE
5.09
CHECKED
SCALE
1:2
ALL DIMENSIONS IN MILLIMETRES

AS009

DRAWING REFERENCE No.

Francis SEARCHLIGHTS

COMBINED MODEL AND SET LIST

PRODUCT TITLE **FX560RC 3KW**

(+90° −20°)

MOTOR UNIT ASSY

SHEET NUMBER 6 CONT. ON SHT. 7 DATE MAY 09

ISSUE No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
CHANGE No.	AFD	9.09													

GENERAL ARRANGEMENT DRG.No.

	PART No.	DESCRIPTION	BL	S1	S2	S3	S4	S5	S6	Material	Drg.No.	FIN	DES NO. A6065 MODEL 240/400v									
	C-												Qty	Qty	Qty	Qty	Qty	Qty	Qty	Qty	Qty	Qty
	24606	MOTOR UNIT ASSY		01							C24606											
				01																		
1	24616	MOTOR TOP ASSY		01							C24616		1									
2	24615	PEDESTAL FABRICATION		01	08	39					C24615		1									
3	22381	PED. TOP SEALING GASKET		00							C22381		1									
4	24697	PEDESTAL COVER		00	01	08	39			16069	C24697		1									
5	24696	PEDESTAL COVER GASKET		00							C24696		1									
6	21519	DUBO WASHER		00									12									M6 DUBO WASHER
7	23746	SCREW		00									8									M8 x 25 SKT BTN HD STN.S TO BS6105 A4 CLASS 70
8	15545	SCREW		00									12									M6 x 16 CAP HD STN.S TO BS6105 A4 CLASS 70
9	6999	WASHER		00									16									M8 PLAIN STN.S TO BS6105 A4 CLASS 70
10	15041	WASHER		00									8									M8 S/C SPRING STN.S TO BS6105 A4 CLASS 70
11	9481	NUT		00									8									M8 FUL STN.S TO BS6105 A4 CLASS 70
12	12039	RTV		00									A/R									CLEAR TYPE 108

AS010

CAD = DRG-SHT1 REV 0

FIRST USED ON FX560RC 3KW C24606

DO NOT SCALE DRAWING

THIRD ANGLE PROJECTION

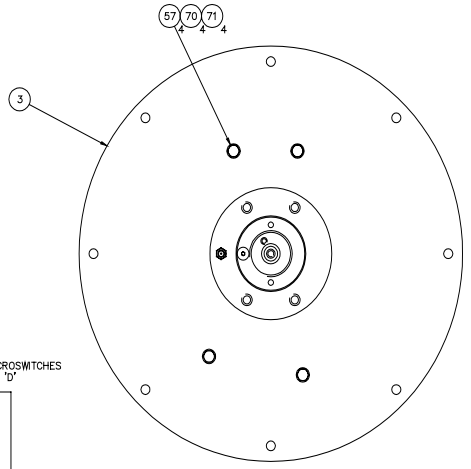
ITEM	PART No.	DRG No.	DESCRIPTION	QTY
1	C21203	C21203	MAIN DRIVE GEAR S/ASSY	1
2	C22403	C22403	PAN MOTOR S/ASSY	1
3	C22392	C22392	PEDESTAL TOP	1
4	C22361	C22361	MOUNTING PLATE TOP	1
5	C22360	C22360	MOUNTING PLATE BOTTOM	1
6	C22359	C22359	BEARING SUPPORT PLATE	1
7	C23868	C23868	MICROSWITCH MTG PLATE	1
8	C23867	C23867	GUIDE PLATE	1
9	C24062	C24062	PAN MOUNTING BRACKET	1
10	C24692	C24692	LIMIT SWITCH BKT	1
11	C22567	C22567	LIMIT SWITCH LEVER	1
12	C22378	C22378	PEDESTAL TOP BOSS	1
13	C23865	C23865	BLANK PLATE	1
14	C22414	C22414	CRUTCH BASE	1
15	C22387	C22387	SUPPORT PILLAR	4
16	C22362	C22362	LEAD SCREW BLOCK	1
17	C23866	C23866	PILLAR	4
18	C22569	C22569	MICROSWITCH INSULATOR	1
19	C23863	C23863	LEAD SCREW	1
20	C21603	C21603	BACKLASH NUT	1
21	C24600	C24600	PUSH ROD	1
22	C21741	C21741	BEARING SPACER	1
23				
24	C21304		THRUST BEARING	1
25	C22069	C22069	KEYWAY	1
26	C23531	C23531	PSU BRACKET	1
27	C22399	C22399	PAN M/SWITCH MTG PL AS	1
28	C24030		'I' DRIVE PAN	1
29	C23530		PSU 24v	1
30	C21211	C21211	GEAR (SMALL)	1
31	C21212	C21211	GEAR (LARGE)	1
32	C22380		MICROSWITCH (NO LEVER)	2

ITEM	PART No.	DRG No.	DESCRIPTION	QTY
33	C22382		MICROSWITCH (LEVER)	2
34	C22389		'O' RING	4
35	C22410		H/CURRENT RECTIFIER	4
36	C22287		TILT MOTOR	1
37	C21215		SHAFT SEAL (LARGE)	1
38	C21216		BEARING	2
39	C08926		SHAFT SEAL (SMALL)	1
40	C15056		TERMINAL BLOCK	2
41	C21967		'O' RING	1
42	C21747		SPRING	1
43	C21785		BEARING	4
44	C21519		M6 DUBO WASHER	3
45	C22415		'O' RING	1
46	C24061	C24061	TILT MOUNTING BRACKET	1
47	C21312		AXIAL BEARING	1
48	C22570	C22570	SPRING	1
49	C22568	C22568	PIVOT PIN	1
50	C14826		GREASE NIPPLE	1
51	C24060		'I' DRIVE TILT	1
52	C23707		'O' RING	1
53	C14430		M8 x 20 CAP HD SCREW	8
54	C11965		M6 x 35 HEX HD SCREW	2
55	C09580		M6 x 25 HEX HD SCREW	5
56	C06962		M6 x 20 HEX HD SCREW	2
57	C08210		M6 x 16 HEX HD SCREW	4
58	C08579		M6 x 12 CAP HD SCREW	1
59	C08410		M5 x 10 CH HD SCREW	2
60	C15760		M4 x 30 PAN HD SCREW	4
61	C13351		M5 x 10 HEX HD SCREW	8
62	C16227		M4 x 50 HEX HD SCREW	8
63	C14533		M4 x 10 HEX HD SCREW	4
64	C20107		M4 x 10 CAP HD SCREW	1

ITEM	PART No.	DRG No.	DESCRIPTION	QTY
65	C15813		M3 x 30 PAN HD SCREW	1
66	C10203		M3 x 16 PAN HD SCREW	8
67	C20753		M3 x 6 CAP HD SCREW	2
68	C10743		M2.5 x 20 PAN HD SCREW	2
69	C21402		No. 4 x 5/8" PAN HD POZI	2
70	C15041		M8 S/C SPRING WASHER	4
71	C06997		M6 PLAIN WASHER	14
72	C10554		M6 S/C SPRING WASHER	16
73	C08392		M5 PLAIN WASHER	10
74	C09231		M5 S/C SPRING WASHER	9
75	C04376		M4 PLAIN WASHER	22
76	C08793		M4 S/C SPRING WASHER	10
77	C08028		M3 PLAIN WASHER	10
78	C10747		M3 S/C SPRING WASHER	10
79	C10745		M2.5 PLAIN WASHER	2
80	C22371		M2.5 S/C SPRING WASHER	2
81	C12354		M8 NYLOC NUT	1
82	C06267		M6 FULL NUT	3
83	C10119		M6 LOCK NUT	2
84	C20637		M4 x 12 O/D WASHER	2
85	C12351		M4 NYLOC NUT	8
86	C12350		M3 NYLOC NUT	1
87	C10744		M2.5 FULL NUT	2
88	C13853		NUTLOCK	A/R
89	C21241		RETAINER	A/R
90	C14127		COPPERSLIP GREASE	A/R
91	C24178		M5 x 10 CSK SKT HD SCREW	1
92	C24035		'I' DRIVE CONNECTOR KIT	2
93	C14232		HEATSINK COMPOUND	A/R
94	C24021		FUSE HOLDER	1
95	C24118		FUSE	1
96	C23277		HEATER 110v – 240v	1
97	C06266		NUT M4 FULL NUT	2

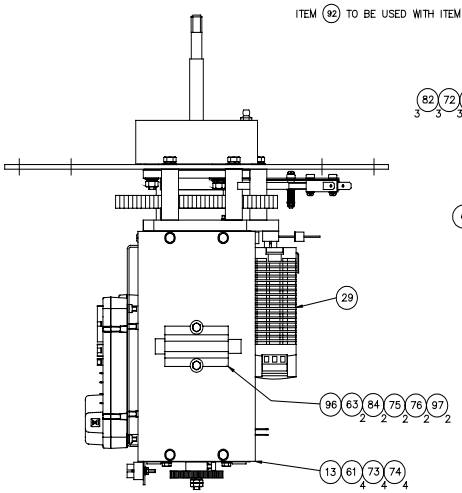
NOTE

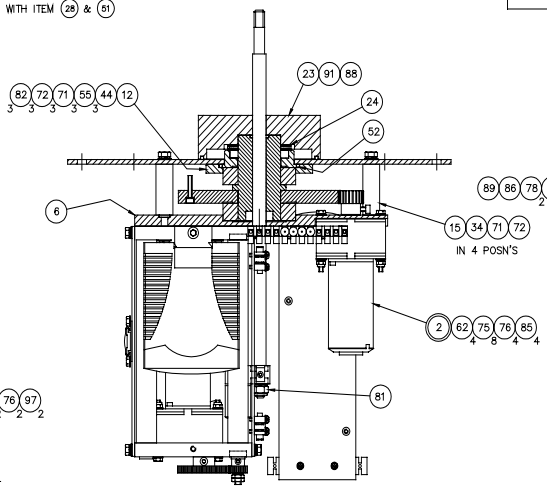
APPLY ITEM (90) WHERE APPROPRIATE SEE WORK INSTRUCTIONS

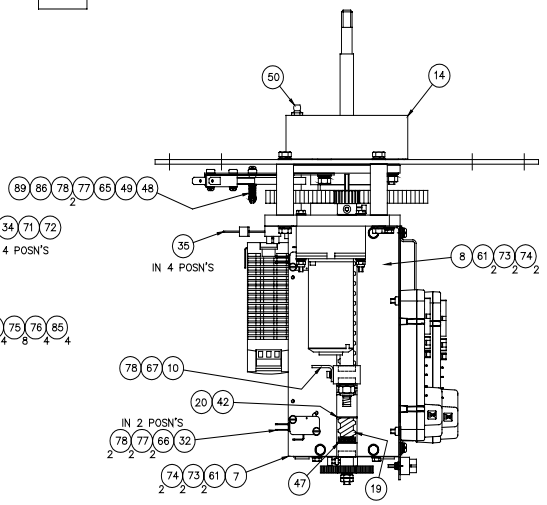


POSITIONS OF MICROSWITCHES USE HOLES 'B' & 'D'

ITEM (92) TO BE USED WITH ITEM (28) & (51)







ISS No	MODIFICATION DETAILS	DATE & INITS
1	AS FIRST DRAWN	5.09 LW
2	LIMIT SWITCH CHANGED	8.09 LW

STANDARD PRACTICE
Deburr all cut/machined edges
Break corners R0.25(Max) U.O.S.

FRANCIS SEARCHLIGHTS LIMITED . UNION ROAD . BOLTON . BL2 2HJ

© 2009 A1 CONT ON SHEET 2

DRAWN	LW	DATE	5.09
CHECKED		SCALE	1:2
ALL DIMENSIONS IN MILLIMETRES			

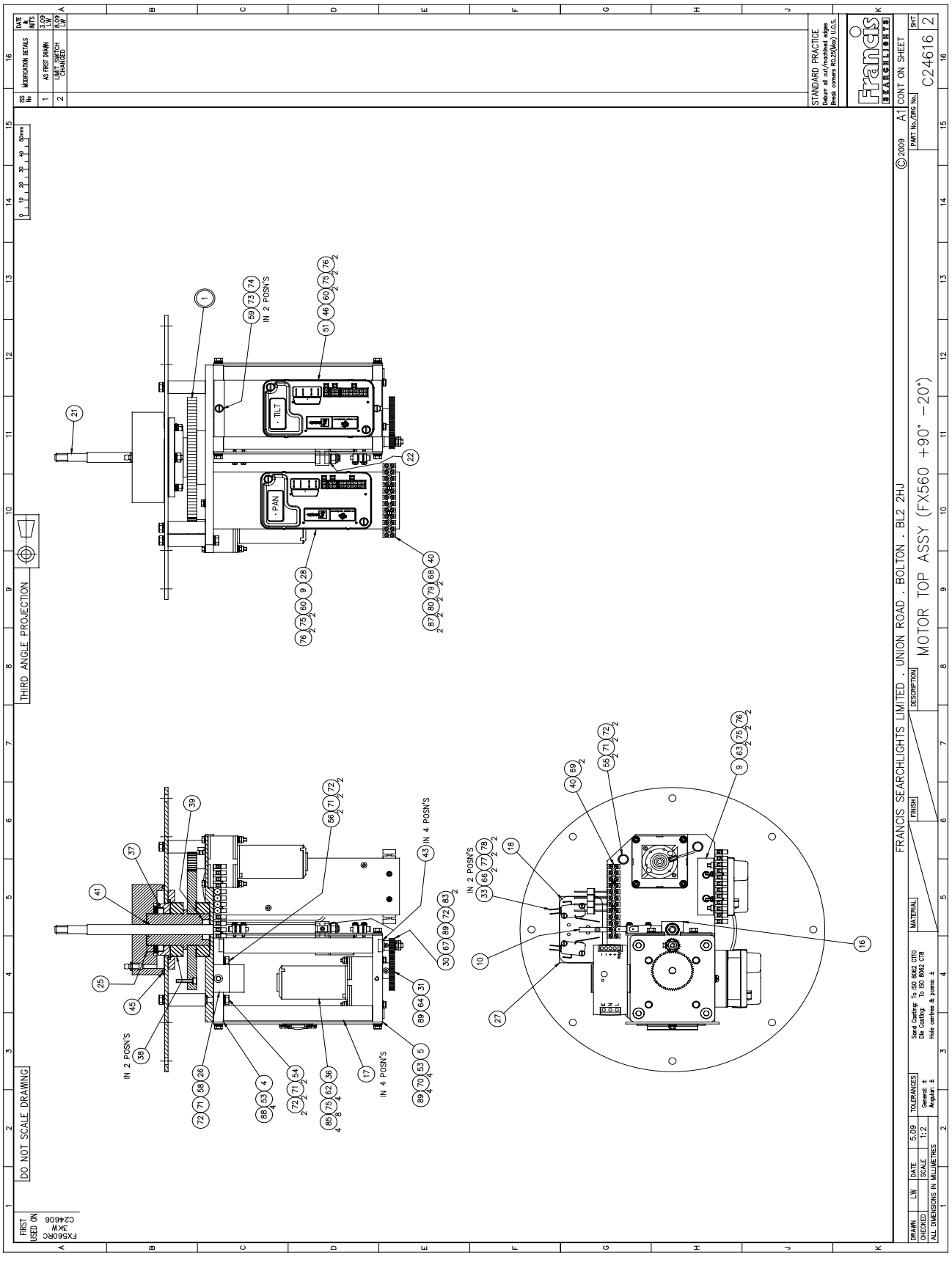
TOLERANCES
General: ±
Angular: ±
Sand Casting: To ISO 8062 CT10
Die Casting: To ISO 8062 CT8
Hole centres & posns: ±

MATERIAL

FINISH

DESCRIPTION: MOTOR TOP ASSY (FX560 +90° –20°)

PART No./DRG No. C24616 SHT 1


FRANCIS SEARCHLIGHTS LIMITED . UNION ROAD . BOLTON . BL2 2HJ
MOTOR TOP ASSY (FX560 +90° −20°)
C24616
THIRD ANGLE PROJECTION
DO NOT SCALE DRAWING
STANDARD PRACTICE
© 2009 A1 CONT ON SHEET
IN 2 POSN'S
IN 4 POSN'S
· TILT ·
· PAN ·

AS012

DRAWING REFERENCE No.

Francis SEARCHLIGHTS

COMBINED MODEL AND SET LIST

PRODUCT TITLE FX560RC 3KW

(+90° −20°) MOTOR TOP ASSY

SHEET NUMBER 7 CONT. ON SHT. 8 DATE MAY 09

GENERAL ARRANGEMENT DRG.No.

ISSUE No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
CHANGE No.	AFD	8.09													
FIN															
DES NO. A6065															
MODEL 240/400v															

	PART No.	DESCRIPTION	BL	S1	S2	S3	S4	S5	S6	Material	Drg.No.	Qty	Qty	Qty	Qty	Qty	Qty	Qty	Qty	Qty	Qty	
	C-																					
	24616	MOTOR TOP ASSY		01							C24616											
1	21203	MAIN DRIVE GEAR S/ASSY		01							C21203	1										FOR BREAKDOWN SEE V/S M8 MOTOR UNIT SHEET 5
2	22403	PAN MOTOR S/ASSY		01							C22403	1										FOR BREAKDOWN SEE V/S M8 MOTOR UNIT SHEET 5
3	22392	PEDESTAL TOP		00	08	39					C22392	1										RICHARDS SHEET METAL
4	22361	MOUNTING PLATE TOP		00	01	32				21729	C22361	1										
5	22360	MOUNTING PLATE BOTTOM		00	01	32				21729	C22360	1										
6	22359	BEARING SUPPORT PLATE		00	01	32				21205	C22359	1										
7	23868	MICROSWITCH MTG PLATE		00	01	32				16074	C23868	1										
8	23867	GUIDE PLATE		00	01	32				16074	C23867	1										
9	24062	PAN MTG BRACKET ASSY		01							C24062	1										FOR BREAKDOWN SEE M8 MOTOR UNIT SHEET 6
10	24692	LIMIT SWITCH BRACKET		00	01					20564	C24692	1										
11	22567	LIMIT SWITCH LEVER		00	01					16734	C22567	1										
12	22378	PEDESTAL TOP BOSS		00	01	08	39			13127	C22378	1										
13	23865	BLANK PLATE		00	01	32				16074	C23865	1										
14	22414	CRUTCH BASE		00	01	08	39			22414	C22414	1										
15	22387	SUPPORT PILLAR		00	01					1635	C22387	4										
16	22362	LEAD SCREW BLOCK		00	01					1605	C22362	1										
17	23866	PILLAR		00	01	32				9404	C23866	4										
18	22569	MICROSWITCH INSULATOR		00	01					21626	C22569	1										RS 349-9712
19	23863	LEAD SCREW		00	01					21154	C23863	1										
20	21603	BACKLASH NUT		00	01					1609	C21603	1										
21	24600	PUSH ROD		00	01					1674	C24600	1										
22	21741	BEARING SPACER		00	01					1583	C21741	1										
23																						
24	21304	THRUST BEARING		00								1										ABEX/ABEL BEARINGS RS 198-8939
25	22069	KEYWAY		00	01					22068	C22069	1										

CAD = DRG-SHT1 REV 0

DRAWING REFERENCE No.

Francis SEARCHLIGHTS

COMBINED MODEL AND SET LIST

PRODUCT TITLE **FX560RC 3KW**

(+90° −20°) MOTOR TOP ASSY

SHEET NUMBER 8 CONT. ON SHT. 9 DATE MAY 09

GENERAL ARRANGEMENT DRG.No.

ISSUE No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
CHANGE No.	AFD														

	PART No.	DESCRIPTION	BL	S1	S2	S3	S4	S5	S6	Material	Drg.No.	FIN	DES NO. A6065	MODEL 240/400v									
	C-												Qty	Qty	Qty	Qty	Qty	Qty	Qty	Qty	Qty	Qty	
26	23531	PSU BRACKET		00	01					16578	C23531		1										STAINLESS STEEL
27	22399	PAN M/SWITCH MTG PL ASSY		01							C22399		1										
28	24030	'I' DRIVE PAN		00	01					24030			1										
29	23530	PSU 24v		00									1										
30	21211	GEAR (SMALL)		00							C21211		1										
31	21212	GEAR (LARGE)		00							C21211		1										
32	22380	MICROSWITCH (NO LEVER)		00									2										
33	22382	MICROSWITCH (WITH LEVER)		00									2										
34	22389	'O' RING		00									4										
35	22410	HIGH CURRENT RECTIFIER		00									4										
36	22287	TILT MOTOR		00									1										24v DC RATIO 62-5:1 80-817-0 CROUZET
37	21215	SHAFT SEAL (LARGE)		00									1										
38	21216	BEARING		00									2										
39	8926	SHAFT SEAL (SMALL)		00									1										
40	15056	TERMINAL BLOCK		00									2										
41	21967	'O' RING		00									1										
42	21747	SPRING		00									1										
43	21785	BEARING		00									4										
44	21519	M6 DUBO WASHER		00									3										
45	22415	'O' RING		00									1										
46	24061	TILT MTG BRACKET ASSY		01							C24061		1										
47	21312	AXIAL BEARING		00									1										
48	22570	SPRING		00							C22570		1										
49	22568	PIVOT PIN		00	01					16734	C22568		1										BRASS
50	14826	GREASE NIPPLE		00									1										
51	24060	'I' DRIVE TILT		00	01					24030			1										
52	23707	'O' RING		00									1										

CAD = DRG-SHT1 REV 0

DRAWING REFERENCE No.

Francis SEARCHLIGHTS

COMBINED MODEL AND SET LIST

PRODUCT TITLE **FX560RC 3KW**

(+90° −20°) MOTOR TOP ASSY

SHEET NUMBER 9 CONT. ON SHT. 10 DATE MAY 09

GENERAL ARRANGEMENT DRG.No.

ISSUE No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
CHANGE No.	AFD														

	PART No.	DESCRIPTION	BL	S1	S2	S3	S4	S5	S6	Material	Drg.No.	FIN	DES NO. A6065	MODEL 240v								
													Qty	Qty	Qty	Qty	Qty	Qty	Qty	Qty	Qty	Qty	
53	C-14430	SCREW		00									8										M8 x 20 CAP HD STN.S TO BS6105 A4 CLASS 70
54	11965	SCREW		00									2										M6 x 35 HEX HD STN.S TO BS6105 A4 CLASS 70
55	9580	SCREW		00									5										M6 x 25 HEX HD STN.S TO BS6105 A4 CLASS 70
56	6962	SCREW		00									2										M6 x 20 HEX HD STN.S TO BS6105 A4 CLASS 70
57	8210	SCREW		00									4										M6 x 16 HEX HD STN.S TO BS6105 A4 CLASS 70
58	8579	SCREW		00									1										M6 x 12 CAP HD STN.S TO BS6105 A4 CLASS 70
59	08410	SCREW		00									2										M5 x 10 CH HD STN.S TO BS6105 A4 CLASS 70
60	15760	SCREW		00									4										M4 x 30 PAN HD STN.S TO BS6105 A4 CLASS 70
61	13351	SCREW		00									8										M5 x 10 HEX HD STN.S TO BS6105 A4 CLASS 70
62	16227	SCREW		00									8										M4 x 50 HEX HD STN.S TO BS6105 A4 CLASS 70
63	14533	SCREW		00									4										M4 x 10 HEX HD STN.S TO BS6105 A4 CLASS 70
64	20107	SCREW		00									1										M4 x 10 CAP HD STN.S TO BS6105 A4 CLASS 70
65	15813	SCREW		00									1										M3 x 30 PAN HD STN.S TO BS6105 A4 CLASS 70
66	10203	SCREW		00									8										M3 x 16 PAN HD STN.S TO BS6105 A4 CLASS 70
67	20733	SCREW		00									2										M3 x 6 CAP HD STN.S TO BS6105 A4 CLASS 70
68	10743	SCREW		00									2										M2.5 x 20 PAN HD STN.S TO BS6105 A4 CLASS 70
69	21402	SCREW		00									2										No. 4 x 5/8" PAN HD POZI SELF TAPPER
70	15041	WASHER		00									4										M8 S/C SPRING STN.S TO BS6105 A4 CLASS 70
71	6997	WASHER		00									14										M6 PLAIN STN.S TO BS6105 A4 CLASS 70
72	10554	WASHER		00									16										M6 S/C SPRING STN.S TO BS6105 A4 CLASS 70
73	8392	WASHER		00									10										M5 PLAIN STN.S TO BS6105 A4 CLASS 70
74	9231	WASHER		00									9										M5 S/C SPRING STN.S TO BS6105 A4 CLASS 70
75	4376	WASHER		00									24										M4 PLAIN STN.S TO BS6105 A4 CLASS 70
76	8793	WASHER		00									12										M4 S/C SPRING STN.S TO BS6105 A4 CLASS 70
77	8028	WASHER		00									10										M3 PLAIN STN.S TO BS6105 A4 CLASS 70
78	10747	WASHER		00									10										M3 S/C SPRING STN.S TO BS6105 A4 CLASS 70
79	10745	WASHER		00									2										M2.5 PLAIN STN.S TO BS6105 A4 CLASS 70
80	22371	WASHER		00									2										M2.5 S/C SPRING STN.S TO BS6105 A4 CLASS 70

CAD = DRG-SHT1 REV 0

DRAWING REFERENCE No.

Francis SEARCHLIGHTS

COMBINED MODEL AND SET LIST

PRODUCT TITLE **FX560RC 3KW**

(+90° −20°) MOTOR TOP ASSY

SHEET NUMBER 10 CONT. ON SHT. 11 DATE MAY 09

GENERAL ARRANGEMENT DRG.No.

ISSUE No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
CHANGE No.	AFD														

	PART No.	DESCRIPTION	BL	S1	S2	S3	S4	S5	S6	Material	Drg.No.	FIN	DES NO. A6065	MODEL 240/400v								
	C-												Qty	Qty	Qty	Qty	Qty	Qty	Qty	Qty	Qty	Qty
81	12354	NUT		00									1									M8 NYLOC STN.S TO BS6105 A4 CLASS 70
82	6267	NUT		00									3									M6 FULL STN.S TO BS6105 A4 CLASS 70
83	10119	NUT		00									2									M6 LOCK STN.S TO BS6105 A4 CLASS 70
84	20637	WASHER		00									2									M4 x 12 O/D WASHER STN.S TO BS6105 A4 CLASS 70
85	12351	NUT		00									8									M4 NYLOC STN.S TO BS6105 A4 CLASS 70
86	12350	NUT		00									1									M3 NYLOC STN.S TO BS6105 A4 CLASS 70
87	10744	NUT		00									2									M2.5 FULL STN.S TO BS6105 A4 CLASS 70
88	13853	NUTLOCK		00									A/R									CYANOTEC TLT 42
89	21241	RETAINER		00									A/R									CYANOTEC TLR 38
90	14127	COPPERSLIP GREASE		00									A/R									
91	24178	SCREW		00									1									M5 x 10 CSK HD STN.S TO BS6105 A4 CLASS 70
92	24035	'I' DRIVE CONNECTOR KIT		01									2									FOR BREAKDOWN SEE M8 MOTOR UNIT SHEET 6
93	14232	HEATSINK COMPOUND		00									1									RS: 554-311
94	24021	FUSE HOLDER		00									1									20 x 5 In-Line Fuseholder with cable Gemstone Electrical W078311
95	24118	FUSE		00									1									5 x 20mm 3a 250v fuse RS: 480-1649
96	23277	HEATER		00									1									60w European Thermo HP05-1/15-(100-240v)
97	06266	NUT		00									2									M4 FULL NUT STN.S TO BS6105 A4 CLASS 70

CAD = DRG-SHT1 REV 0

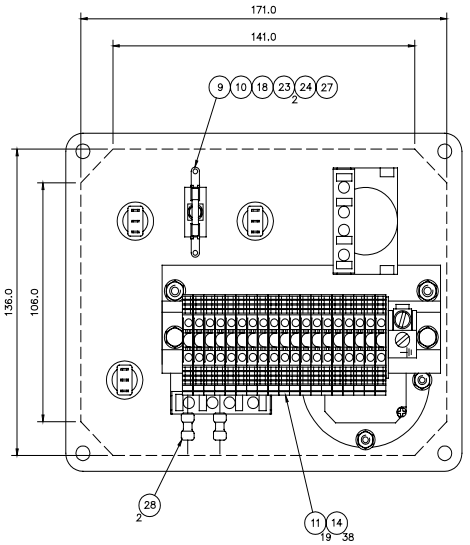
AS016

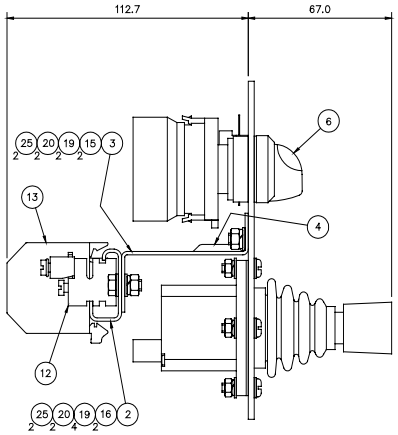
FIRST USED ON A6065

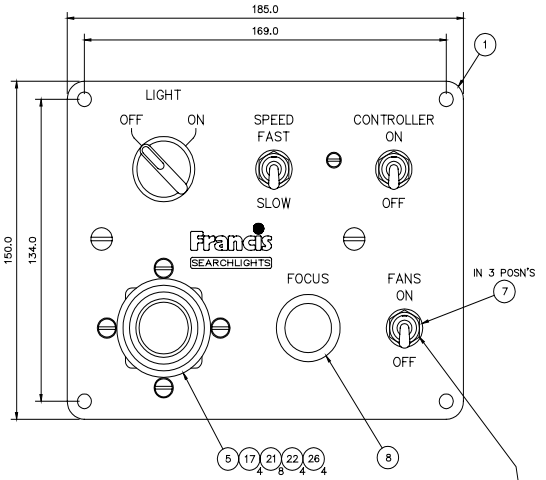
DO NOT SCALE DRAWING

THIRD ANGLE PROJECTION

ISS No	MODIFICATION DETAILS	DATE & INIT'S
1	AS FIRST DRAWN	6.09 LW
2		8.09 LW







THIS SWITCH IS USED TO TURN ON THE FANS INSIDE THE SEARCHLIGHT
IT IS NOT POSSIBLE TO TURN ON THESE FANS AUTOMATICALLY
THIS SWITCH IS ONLY TO BE USED WHEN THE SEARCHLIGHT IS OPERATIONAL

ITEM	PART No.	DRG No.	DESCRIPTION	QTY
1	C24688	C24688	CONTROL PANEL	1
2	C17223	X4966	DIN RAIL	1
3	C22685	C22685	DIN RAIL MTG BRACKET	1
4	C24545		GROMMET	1
5	C22347		POTENTIOMETER JOYSTICK	1
6	C14143		SELECTOR SWITCH 10A	1
7	C22941		SWITCH	3
8	C14142		PUSH BUTTON	1
9	C22343		FUSEHOLDER	1
10	C22344		FUSE 1A 20 x 5mm	1

ITEM	PART No.	DRG No.	DESCRIPTION	QTY
11	C14400		TERMINAL	19
12	C09167		EARTH TERMINAL	1
13	C14139		END COVER	1
14	C15411		CABLE MARKERS	38
15	C10142		SCREW M5 x 12 CSK HD	2
16	C16335		SCREW M5 x 12 HEX HD	2
17	C10136		SCREW M4 x 16 PAN HD	4
18	C10131		SCREW M3 x 10 PAN HD	1
19	C08392		WASHER M5 PLAIN	6
20	C09231		WASHER M5 S/C SPRING	4

ITEM	PART No.	DRG No.	DESCRIPTION	QTY
21	C04376		WASHER M4 PLAIN	8
22	C08793		WASHER M4 S/C SPRING	4
23	C08028		WASHER M3 PLAIN	2
24	C10747		WASHER M3 S/C SPRING	1
25	C08352		NUT M5 FULL	4
26	C06266		NUT M4 FULL	4
27	C05298		NUT M3 FULL	1
28	C22657		RESISTOR	2

STANDARD PRACTICE
Deburr all cut/machined edges
Break corners R0.25(Max) U.O.S.

Francis SEARCHLIGHTS

FRANCIS SEARCHLIGHTS LIMITED . UNION ROAD . BOLTON . BL2 2HJ

© 2009 A1 CONT ON SHEET

DRAWN	LW	DATE	6.09
CHECKED		SCALE	1:1
ALL DIMENSIONS IN MILLIMETRES			

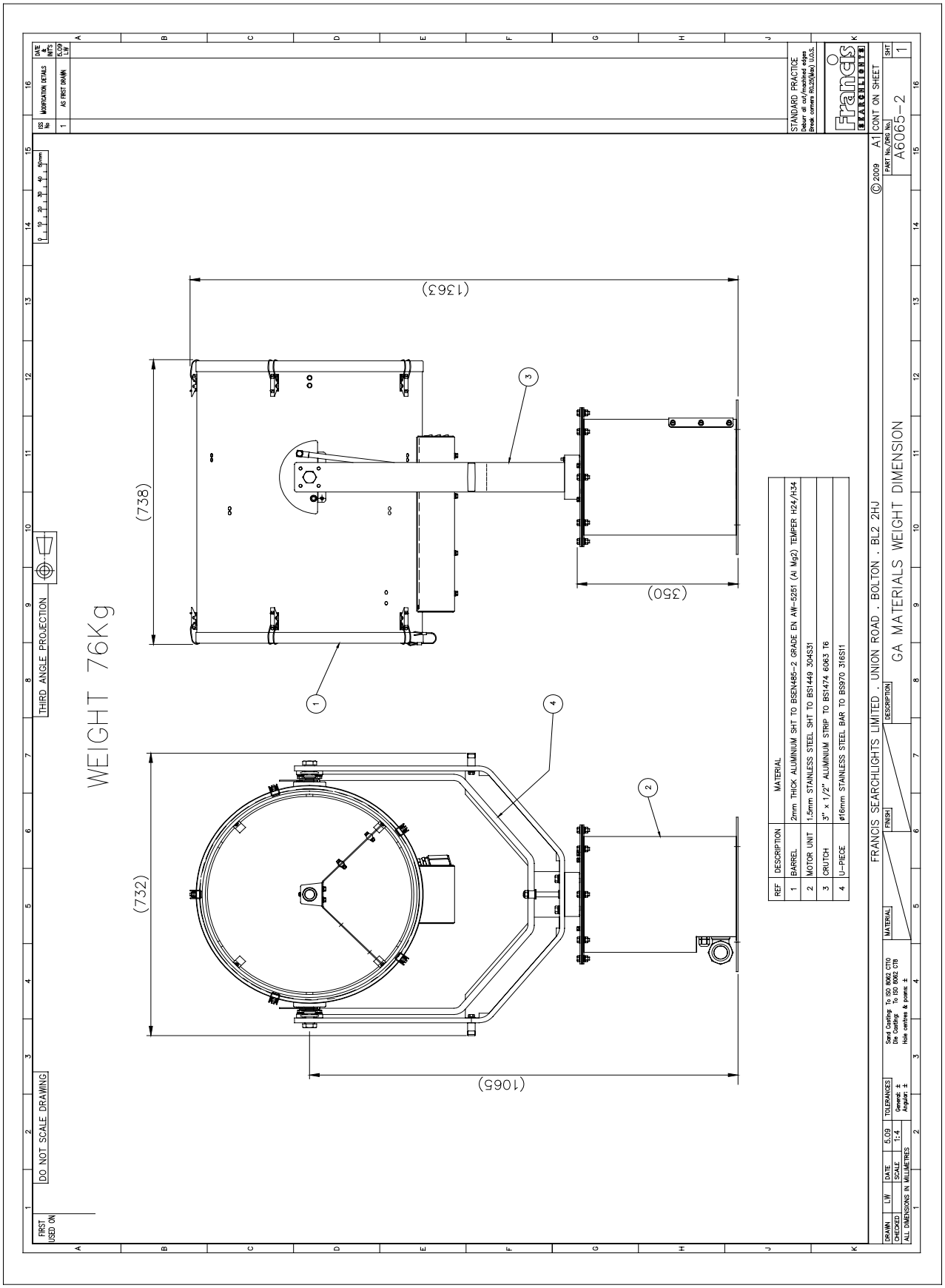
TOLERANCES
General: ±
Angular: ±

Sand Casting: To ISO 8062 CT10
Die Casting: To ISO 8062 CT8
Hole centres & posns: ±

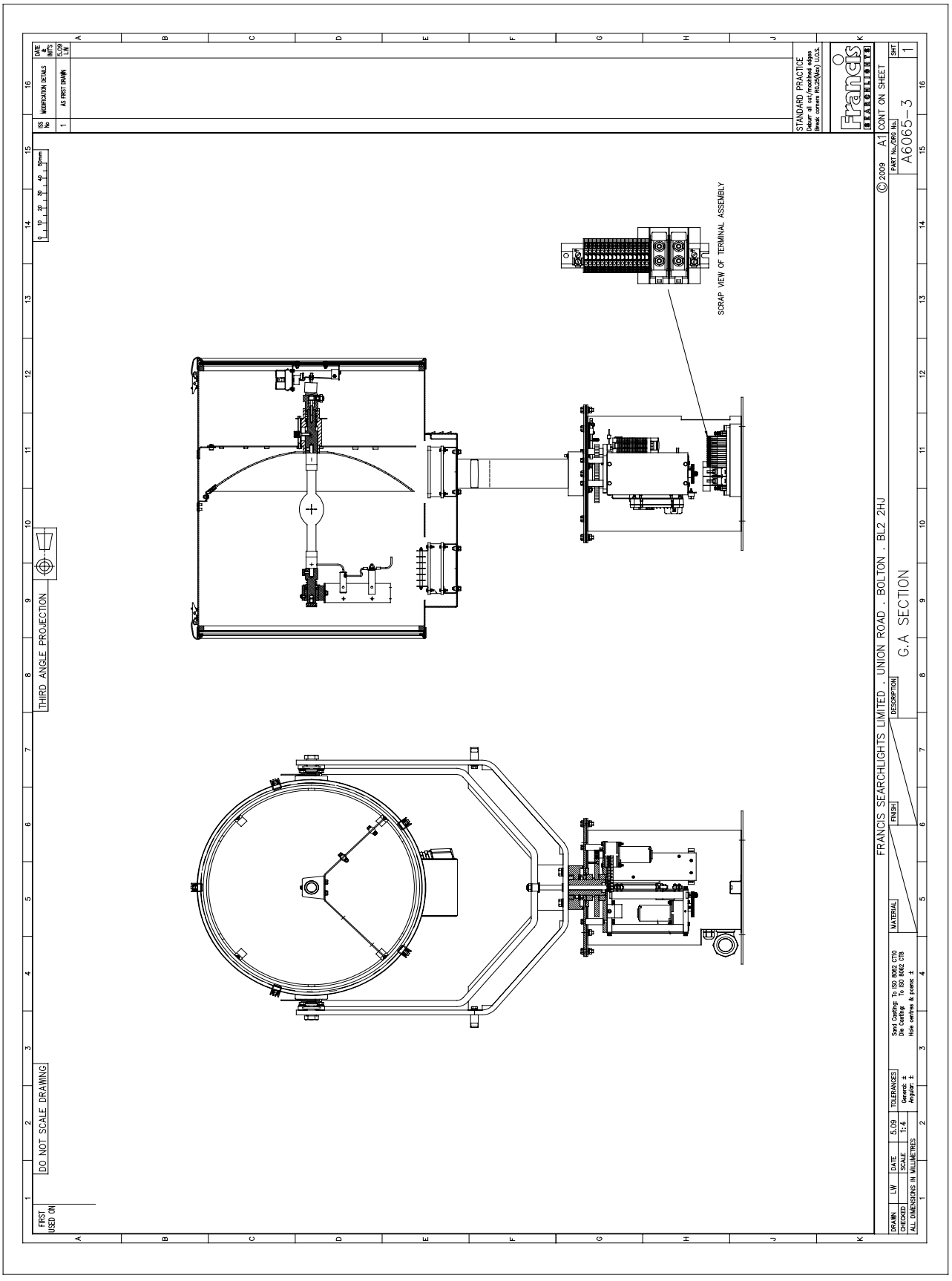
MATERIAL | FINISH | DESCRIPTION

CONTROL PANEL ASSY

PART No./DRG No. C24627 SHT 1


WEIGHT 76Kg
THIRD ANGLE PROJECTION
DO NOT SCALE DRAWING
FIRST USED ON
(1363)
(738)
(350)
(732)
(1065)
1
2
3
4
REF DESCRIPTION MATERIAL
1 BARREL 2mm THICK ALUMINIUM SHT TO BSEN485-2 GRADE EN AW-5251 (Al Mg2) TEMPER H24/H34
2 MOTOR UNIT 1.5mm STAINLESS STEEL SHT TO BS1449 304S31
3 CRUTCH 3" x 1/2" ALUMINIUM STRIP TO BS1474 6063 T6
4 U-PIECE ø16mm STAINLESS STEEL BAR TO BS970 316S11
FRANCIS SEARCHLIGHTS LIMITED . UNION ROAD . BOLTON . BL2 2HJ
GA MATERIALS WEIGHT DIMENSION
A6065-2
STANDARD PRACTICE
Deburr all cut/machined edges
Break corners R0.25(Max) U.O.S.
© 2009
A1
CONT ON SHEET
DRAWN LW DATE 5.09
CHECKED
ALL DIMENSIONS IN MILLIMETRES
SCALE 1:4
TOLERANCES
General ±
Angular ±
MATERIAL
FINISH
DESCRIPTION
ISS No MODIFICATION DETAILS DATE & INITS
1 AS FIRST DRAWN 5.09 LW

AD002


SCRAP VIEW OF TERMINAL ASSEMBLY
THIRD ANGLE PROJECTION
DO NOT SCALE DRAWING
FRANCIS SEARCHLIGHTS LIMITED . UNION ROAD . BOLTON . BL2 2HJ
G.A SECTION
A6065-3
STANDARD PRACTICE
Deburr all cut/machined edges
Break corners R0.25(Max) U.O.S.
© 2009

AD003

AD004

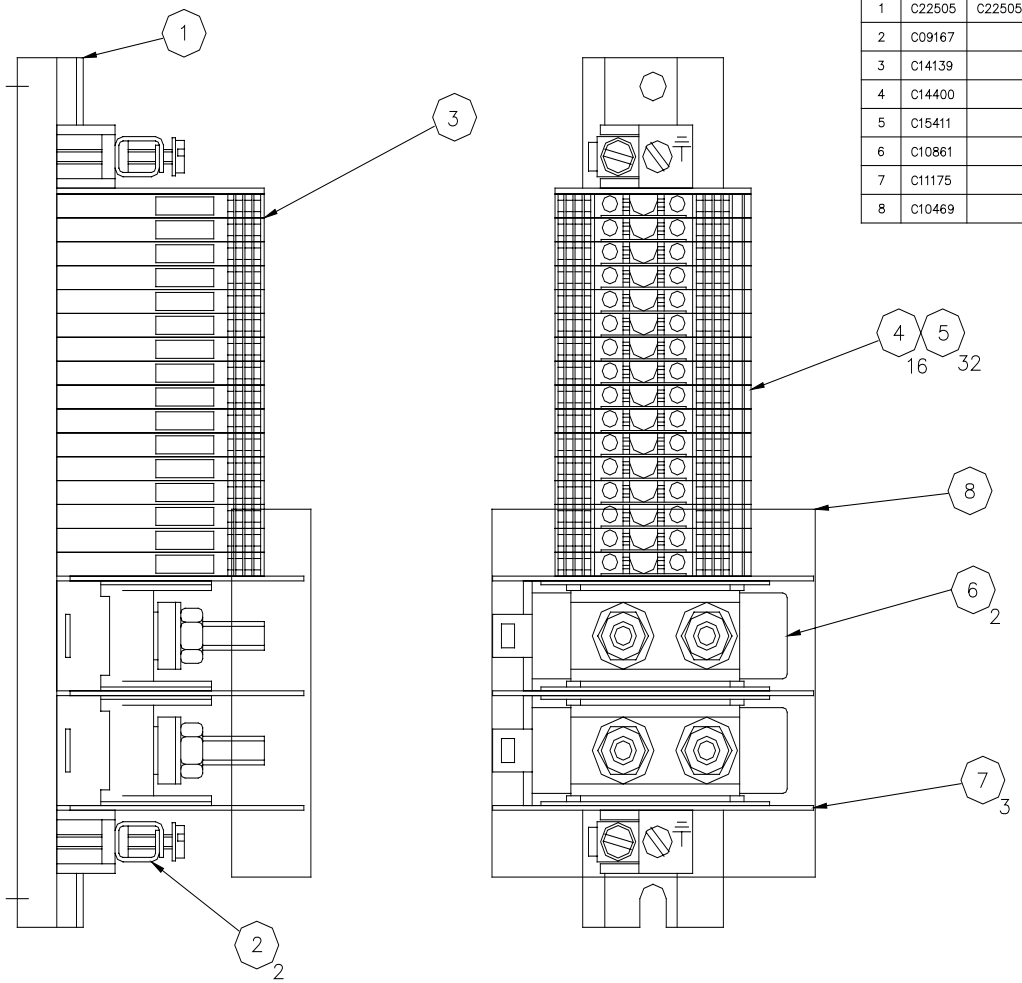
FIRST USED ON
FX380RC 3KW A6065

DO NOT SCALE DRAWING

THIRD ANGLE PROJ

0 10 20 30 40 50mm

ITEM	PART No.	DRG No.	DESCRIPTION	QTY
1	C22505	C22505	MOUNTING RAIL	1
2	C09167		EARTH END STOP	2
3	C14139		END COVER	1
4	C14400		TERMINAL	16
5	C15411		TERMINAL MARKERS	32
6	C10861		H/C TERMINALS	2
7	C11175		H/C SPACERS	3
8	C10469		H/C COVER	1



ISS No	MODIFICATION DETAILS	DATE & INIT'S
1	AS FIRST DRAWN	11.02 M.T
2	TERMINALS +1 (EC1145)	10.06 D.S.
3	EARTH END STOP +1 (EC1229)	11.08 LW

STANDARD PRACTICE
Deburr all cut/machined edges
Break corners R0.25(Max) U.O.S.

TOLERANCES U.O.S: –
General: ±
Angular: ±
Hole centres & posns: ±

Sand Casting: To ISO 8062 CT10
Die Casting: To ISO 8062 CT8

Francis SEARCHLIGHTS

FRANCIS SEARCHLIGHTS LIMITED. UNION ROAD. BOLTON. BL2 2HJ

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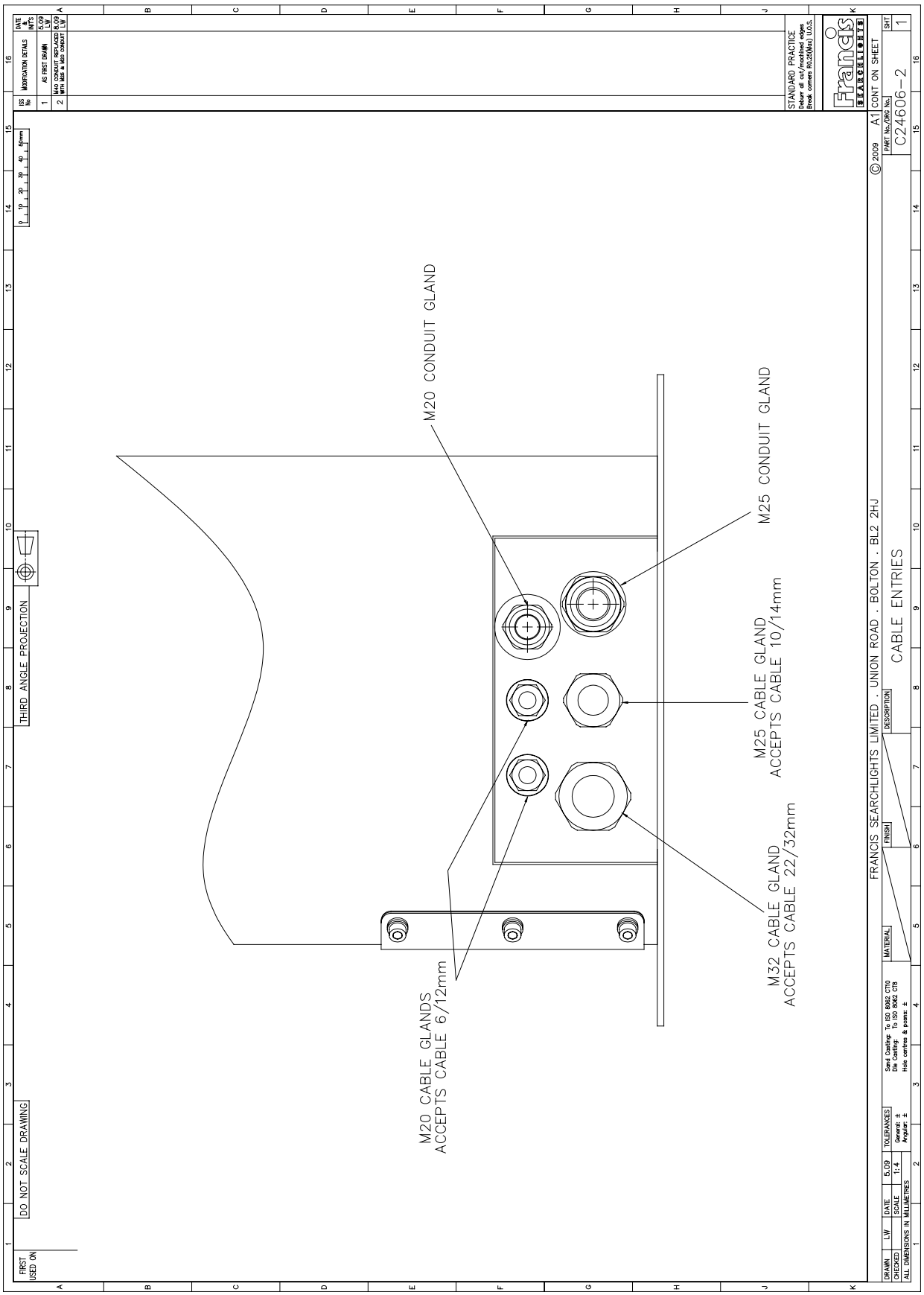
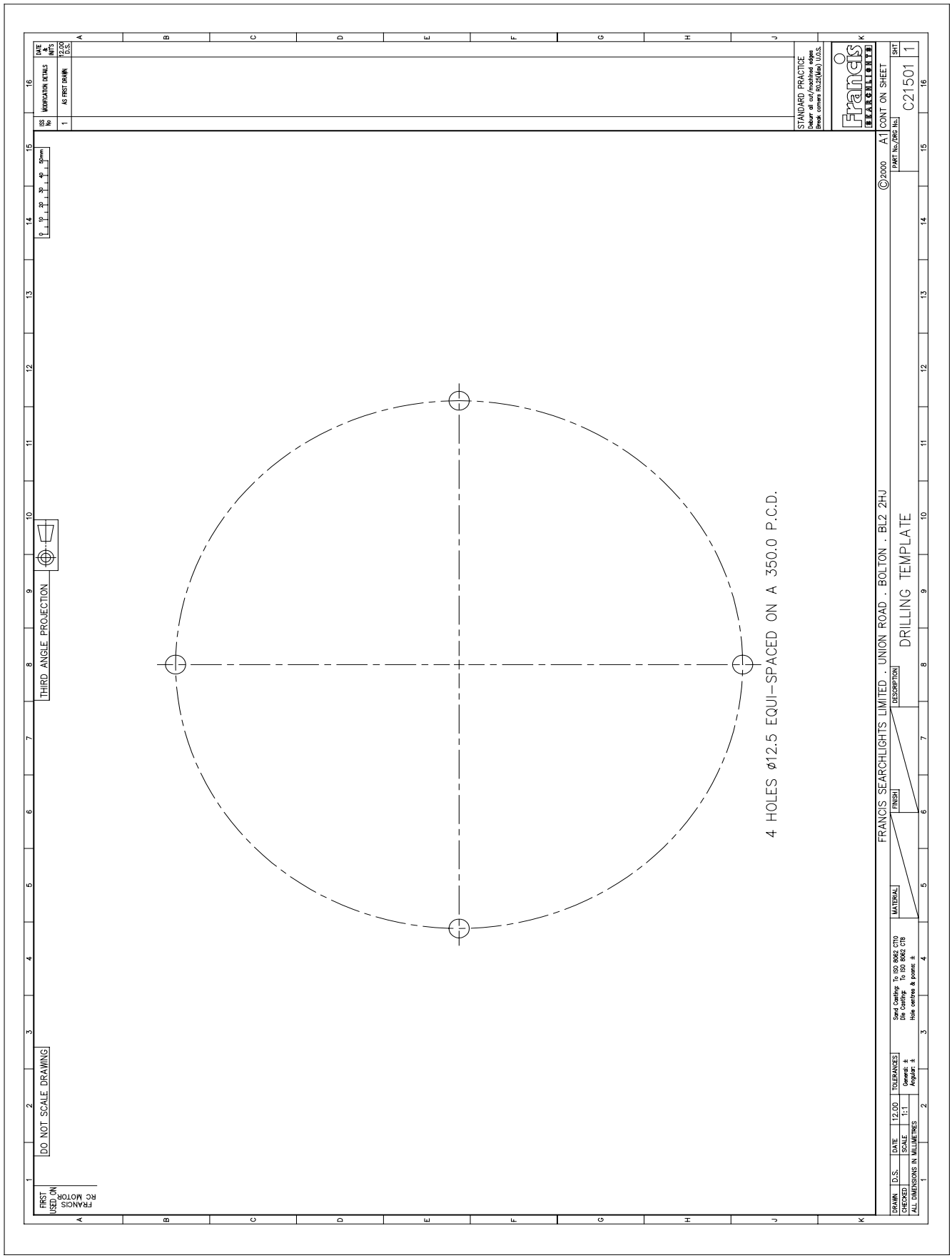
A3

CONT ON SHEET

DRAWN	MARC.T	DATE	11.02	MATERIAL	FINISH	DESCRIPTION	PART No./DRG No.
CHECKED		SCALE	1:1			TERMINAL RAIL ASSY XENON	C22470
ALL DIMENSIONS IN MILLIMETRES							SHT 1


M20 CONDUIT GLAND
M25 CONDUIT GLAND
M25 CABLE GLAND
ACCEPTS CABLE 10/14mm
M32 CABLE GLAND
ACCEPTS CABLE 22/32mm
M20 CABLE GLANDS
ACCEPTS CABLE 6/12mm
CABLE ENTRIES
FRANCIS SEARCHLIGHTS LIMITED . UNION ROAD . BOLTON . BL2 2HJ
THIRD ANGLE PROJECTION
DO NOT SCALE DRAWING
C24606-2

AD005


4 HOLES ø12.5 EQUI-SPACED ON A 350.0 P.C.D.
DRILLING TEMPLATE
FRANCIS SEARCHLIGHTS LIMITED . UNION ROAD . BOLTON . BL2 2HJ
THIRD ANGLE PROJECTION
DO NOT SCALE DRAWING
FIRST USED ON FRANCIS RC MOTOR
STANDARD PRACTICE
Francis SEARCHLIGHTS
C21501 1

AD006

10 - Spare Parts List

The following spare parts can be ordered directly from the manufacturer:

Part Number	Description
C24635-00	Power Supply Unit (240v)
C12081-00	Ignitor (240v)
C24597-00	Fan (240v)
D24177	3Kw Xenon Lamp
C14143-00	Switch 10A - On/Off
C14142-00	Switch – Focus
C22347-00	Joystick
C22941-00	Switch (Controller/speed)
C20881-00	Front Glass
C20569-00	Front/Rear Bezel Gasket
C15458-00	Motor - Remote Focus
C15459-00	Bearing
C23277-01	Heater & Fuse Assembly
C06779-00	Reflector

Motor Gearbox Spares

C22403-01	Pan Motor S/Assy
C22287-00	Tilt Motor
C22380-00	Microswitch no lever
C22382-00	Microswitch with lever
C24030-01	'I' Drive Pan Speed Controller
C24060-01	'I' Drive Tilt Speed Controller
C23530-00	P.S.U.
C22381-00	Pedestal Top Sealing Gasket
C21225-00	Pedestal Cover Gasket
C23237-00	Heater (240v 60w)

In order to prolong the life and performance of your product, we recommend that you only specify Francis Searchlights spare parts. This will ensure that any warranties on your equipment will not be invalidated.

When ordering spare parts please contact the Sales Department at Francis Searchlights Limited. Please quote searchlight model and serial number at all times. This will enable a fast response to your spares' requirements.

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Francis
SEARCHLIGHTS

BSI REGISTERED FIRM BS EN ISO 9001:2000 Certificate No. FM 20940	Union Road, Bolton, BL2 2HJ, U.K. Tel: 01204 558960 Fax: 01204 558979

CERTIFICATE OF CONFORMITY

Customer: Gusto Projects BV/ SBM Karel Doormanweg 66 3115 JD, Schiedam Netherlands	Certificate No. C5644 Order No. 90.274.0028 Rev001 Our Ref: : L141647 Date: 8th July 2009

DESCRIPTION AND PART NUMBER	SERIAL NOS	QTY
FX560RC Xenon RC Searchlight	V01187	01
3 Phase 400v 3000w Range 13,251 meters		
Elevation + 90 degrees/-20 degrees		
Our Part No: A6065 & Lamp D21908 PSU/Ballast Box Control Panel ABS Cable		
Delivery: Merford Cabins BV		

DEVIATIONS:

Certified that the whole of the supplies detailed/ hereon have been tested, inspected and unless otherwise stated above conform in all respects with the requirements of the contract order. The quality control arrangements in respect of these supplies have been in accordance with our MoD and British Standard Registrations.

Signed by:	A Hadley	Alan Hadley, Quality Assurance Manager

CV001

Francis
SEARCHLIGHTS

BSI REGISTERED FIRM BS EN ISO 9001:2000 Certificate No. FM 20940	Union Road, Bolton, BL2 2HJ, U.K. Tel: 01204 558960 Fax: 01204 558979

TEST CERTIFICATE

Customer: Gusto Projects BV / SBM Karel Doormanweg 66 3115 JD Schiedam The Netherlands	Certificate No. T5691 Order No. PO 90.274.0028 REV001 Our Ref: : L141647 Date: 8th July 2009

DESCRIPTION AND PART NUMBER	SERIAL NOS	QTY
FX560RC Xenon RC Searchlight	V01187	01
3 Phase 400v 3000w Range 13,251 meters		
Elevation + 90 degrees/-20 degrees		
Our Part No: A6065 & Lamp D21908 PSU/Ballast Box Control Panel ABS Cable		
Delivery: Merford Cabins BV		

Remarks:

We hereby certify that the equipment shown on this document was tested prior to shipment and found to be satisfactory in every respect according to our Quality Control Procedure.

Signed by:	A Hadley	Alan Hadley, Quality Assurance Manager

CD001

Certificate Number: 03-GE411888/1-PDA

ABS
TYPE APPROVAL PROGRAM

Confirmation of Type Approval

This is to certify that, pursuant to the Rules of American Bureau of Shipping (ABS), on 11/JAN/2008 the manufacturer of the below listed product held a valid Manufacturing Assessment (MA) and a valid Product Design Assessment (PDA) for the below listed product, entitling the product to type approval. The validity of the Manufacturing Assessment is dependent on satisfactory audits as required by the Rules. The Product Design Assessment is valid only for products intended for use on ABS classed vessels, MODUs or facilities which are in existence or under contract for construction on the date of the ABS Rules used to evaluate the Product.

For Date of ABS Rules used for evaluation; Please refer to the ABS Rules below.

This Confirmation of Product Type Approval is valid as of the date shown above for the below listed product.

ABS makes no representations regarding type approval of the Product for use on vessels, MODUs or facilities built after the date of the ABS Rules used for evaluation.

Due to wide variety of specifications used in the products ABS has evaluated for Type Approval, it is part of our contract that the Client has full responsibility for continued compliance with the evaluation standard, whether the standard is an ABS Rule or a non-ABS Rule. As specified in the ABS Rules, Unit Certification may be required in addition to Product Type Approval. Please refer to the "Service Restrictions" shown below to determine if Unit Certification is required for this product.

Controlcavi Industria S.r.l.
Model Name(s): XI; XAI; XI-2; XAI-2

Presented to:
Controlcavi Industria S.r.l.
S.S. Casilina KM 78600
Ferentino (FR)
03013
Italy

Intended Service:	Power and Control Cables
Description:	Flame retardant, halogen free, low smoke electric cables. Construction: plain or tinned copper wire conductors; XLPE insulation; polyolefine compound filler or alternatively halogen free separator tape; SHF1 or SHF2 low temp (-40°C) outer sheath. Armoured versions (identified by letter A) with plain/tinned copper or galvanized steel wire braid between filler/separator and outer sheath.
Ratings:	0.6/1 kV; temperature class 85°C; maximum current carrying capacity as per 4-8-3/Table 6 of the Rules
Service Restrictions:	Unit Certification is not required for this product.
Comments:	Installation to be carried out in compliance with 4-8-4/21 of 2005 Steel Vessels Rules
Notes / Documentation:	
Term of Validity:	This product/model is covered under Product Design Assessment (PDA) Certificate # 03-GE411888/1-PDA, dated 01/Apr/2005. This PDA Certificate expires Mar of 2010. It will remain valid for the 5 years from date of issue or until the Rules or specifications used in the assessment are revised (whichever occurs first).
ABS Rules:	2005 Steel Vessel Rules 1-1-4/7.7, 4-8-3/9
National Standards:	CSA C 22.2 N 38-95 clauses 6.4.4 and 6.4.5
International Standards:	IEC 60092-350 (2001); IEC 60332-3-22 (2000); IEC 60754-1 (1994); IEC 60754-2 (1991); IEC 61034 (1997); Test Specification IMO Resolution MSC 41(64)

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CD002

Francis
SEARCHLIGHTS

BSI REGISTERED FIRM BS EN ISO 9001:2000 Certificate No. FM 20940	Union Road, Bolton, BL2 2HJ, U.K. Tel: 01204 558960 Fax: 01204 558979

WARRANTY CERTIFICATE

Customer: Gusto Projects BV / SBM Karel Doormanweg 66 3115 JD Schiedam The Netherlands	Certificate No. W5690 Order No. PO 90.274.0028 REV001 Our Ref: : L141647 Date: 8th July 2008

DESCRIPTION AND PART NUMBER	SERIAL NOS	QTY
FX560RC Xenon RC Searchlight	V01187	01
3 Phase 400v 3000w Range 13,251 meters		
Elevation + 90 degrees/-20 degrees		
Our Part No: A6065 & Lamp D21908 PSU/Ballast Box Control Panel ABS Cable		
Delivery: Merford Cabins BV		

Remarks:

We hereby certify that the equipment shown on this document was manufactured from new materials and complies in all respects to our Quality Control Procedure. The equipment is guaranteed against manufacturing defect for a period of 12 months from the date of commissioning of the vessel or 24 months from the date of Bill of Lading whichever is earlier.

Signed by:	A Hadley	Alan Hadley, Quality Assurance Manager

CW001